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Research Article

An Annotated Checklist of Mymaridae (Hymenoptera: Chalcidoidea) in Taiwan, with Descriptions of Five New Species

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Abstract

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A checklist of the fairyflies (Hymenoptera: Mymaridae) known from Taiwan is presented, annotated with information on their distribution and host associations. There are 28 genera and 60 named species, among them 13 genera and 33 species are new records for Taiwan. The five new species described here are *Acmopolynema berezovskiyi* sp. nov., *Anagroidea montana* sp. nov., *Camptoptera jthuberi* sp. nov., *Mymar alishan* sp. nov., and *Ooctonus kokozai* sp. nov. The male of *Eubroncus orientalis* Yoshimoto, Kozlov and Trjapitzin, 1972 (the type species of the genus *Eubroncus* Yoshimoto, Kozlov and Trjapitzin, 1972) is redescribed, and its previously unknown female is described based on specimens from Sulawesi Island, Indonesia; an updated world key to the species of *Eubroncus* is provided. *Eubroncus hani* Jin and Li, 2014 syn. nov. is synonymized under *Eubroncus indicus* Hayat and Khan, 2009, whose male is described here based on specimens from Nepal; the previously-unknown males of *Cosmocomoidea tenuis* Xu, Lin and Hu, 2016 and *Eubroncus tibetanus* Jin and Li, 2014 are also described based on specimens from Taiwan and Japan, respectively. As egg parasitoids, some members of the family are important as natural enemies of agricultural pests, such as rice planthoppers and leafhoppers (Hemiptera: Delphacidae and Cicadellidae, respectively); previous records of these in Taiwan are critically analyzed.

Key words: Mymaridae, List, New species, Taiwan, Egg parasitoid.

INTRODUCTION

Mymaridae, or fairyflies (Hymenoptera: Chalcidoidea) are a rather large, speciose family whose members are, with very few exceptions, egg parasitoids of various insects. As such, some species are important as natural enemies of agricultural pests, such as rice planthoppers and leafhoppers (Hemiptera: Delphacidae and Cicadellidae) (Triapitsyn 2002, 2013a, 2013c). Taguchi (1974, 1975, 1977a, 1977b, 1978) published on taxonomy of the genera *Camptoptera* Foerster, 1856, *Himopolynema* Taguchi, 1977, *Mymar* Curtis, 1829, *Palaeoneura* Waterhouse, 1915, and *Stephanodes* Enock, 1909, which contain descriptions of several new species from Taiwan. Unfortunately, the entire Dr. Hidenari Taguchi collection of Mymaridae, which was supposed to be deposited in the Entomological Laboratory, College of Agriculture, Ehime University, Matsuyama, Japan (EUMJ), has never made it there, being lost from his home, including the types (Huber 2003; Triapitsyn 2014b, 2015a). More recently, Triapitsyn (2015a) and Triapitsyn *et al*. (2017) added several new species to

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the knowledge of the mymarid fauna of Taiwan and designated neotypes for the species of *Himopolynema* described in Taguchi (1977a). The same remains to be done for his species of *Camptoptera* and *Palaeoneura*, but freshly collected, matching specimens of these genera from or near their type localities in Taiwan are unfortunately lacking.

Tian *et al*. (2006) reported a surprisingly low generic diversity index for the Mymaridae of Taiwan which they suggested, along with Tibet's, to be significantly lower than that for Fujian, China; however, that is certainly a misleading conclusion because the mymarid fauna of Taiwan was, at that time (and still is, despite some recent progress), poorly known and is, like that of Fujian, mostly Oriental, with some Palaearctic and other elements. One would expect, due to the large size of the island, the diversity of its habitats, and relative proximity to mainland China, greater diversity than reported, and some endemism (particularly in the mountains). The ability of fairyflies to be dispersed by wind would also mitigate that, so more likely, the mymarid fauna of Taiwan could be almost as diverse as that of nearby Fujian (as listed by Lin & Xu 2003), at least at the generic level. However, thorough collecting efforts of the family in Taiwan have been lacking recently, so few fresh specimens of good quality are currently available to properly assess the true diversity. For that reason, and also because one could expect at least five more genera to occur in Taiwan besides the 28 genera listed here (13 newly recorded), providing a key to the mymarid genera of Taiwan would be pointless at this time; for the time being, these can be mostly identified using the available generic keys for the Oriental region (Subba Rao & Hayat 1983) and China (Lin & Xu 2000), as well as for the Palaearctic region (Triapitsyn & Huber 2000) for specimens collected at high altitudes.

During the 1950s–1970s, Kwei-Shui Lin (1921–2002), a taxonomist and prolific collector of parasitic Hymenoptera, who worked at the Taiwan Agricultural Research Institute (TARI) in Taipei City before moving to Taichung, captured almost 3,000 mymarids throughout Taiwan (the bulk are from Taipei City and its environs). Unfortunately, these represent just a few genera (most specimens belong to those in the tribe Gonatocerini, some of which I sorted to genus and species) and were almost all rather poorly mounted, without proper clearing and positioning, on individual slides. These are all labeled in English and kept in about 30 slide boxes in the insect collection of the TARI, Wufeng, Taichung, Taiwan, Republic of China, besides just a few air-dried, dry-mounted specimens on points. His collection has proven to be an invaluable resource for this study, and also for my previous publication on *Himopolynema* of Taiwan (Triapitsyn 2015a).

Lin (1974), Miura *et al*. (1981), and Chen (1993) reported on egg parasitoids of the rice leafhoppers and planthoppers in Taiwan; Chen & Yu (1989) studied *Anagrus* Haliday, 1833 egg parasitoids of rice brown planthopper, *Nilaparvata lugens* (Stål, 1854) (Delphacidae). Chu & Hirashima (1981) summarized the earlier Taiwanese literature on the natural enemies of the rice leafhoppers and planthoppers, while Hirashima (1981) provided information on their survey in Taiwan. Unfortunately, almost no voucher specimens from these earlier studies in Taiwan could be found in the museum collections there, so with a few exceptions I was unable to verify their identity with confidence; it seems likely that most of them were misidentified at species level. Particularly, the voucher specimens of Miura *et al*. (1981) from Taiwan could not be located in the Kyushu University Museum (formerly in the Entomological Laboratory), Kyushu University, Hakozaki, Higashi-ku, Fukuoka, Japan (KUEC) (Dr. T. Mita, personal communication), so I was able to examine just a few specimens from that study which had been sent by Dr. T. Miura for identification to Dr. J. T. Huber to the Canadian National Collection of Insects, Arach-

nids and Nematodes, Ottawa, Ontario, Canada (CNC) (Triapitsyn & Berezovskiy 2004a). Per Dr. K. Kitamura (Shimane University, Matsue, Japan), Dr. Tadashi Miura's collection had been kept at his home but, according to his son Dr. Kazuki Miura, it was lost a long time ago (Dr. T. Mita, personal communication).

MATERIALS AND METHODS

Most specimens were identified during visits to TARI in August 2013 and October 2016. Additional material from Taiwan is deposited in the CNC (specimens had been sorted to genus by Dr. John T. Huber who generously loaned them to me) and the Entomology Research Museum, Department of Entomology, University of California, Riverside, California, USA (UCRC). All measurements (given in mm, as length or, for the wings, as length:width) and photographs were taken at UCRC from slide-mounted specimens using an Axioskop 2 Plus compound microscope (Carl Zeiss Microscopy, LLC., Thornwood, NY) and an Auto-Montage system (Syncroscopy, Cambridge, UK); the digital images were processed using Adobe Photoshop. Terminology for morphological features follows Gibson (1997). Abbreviations used are mps, multiporous plate sensillum or sensilla (longitudinal sensillum or sensilla, or sensory ridge or ridges) on the antennal flagellar segments, and F, funicular segment of the female antenna or flagellomere of the male antenna.

New records for Taiwan are marked by an asterisk (*).

AN ALPHABETICAL CHECKLIST OF THE TAIWANESE MYMARIDAE

***Acmopolynema berezovskiyi* Triapitsyn, sp. nov.** (Figs. 1–7)

Type material. Holotype female (TARI) on slide (Fig. 1), labeled: 1. "CHINA: S.TAIWAN Kwei-tzu-chio Heng Chung 22–29. V.1965 KSLin"; 2. "TARI Mounted by V. V. Berezovskiy 2013 in Canada balsam"; 3. [magenta] "*Acmopolynema berezovskiyi* Triapitsyn HOLOTYPE ♀." The type locality is Kueitzuchiao, Hengchun, Kenting National Park, Pingtung Co., Taiwan. The holotype was remounted from a point; it is complete, dissected under 3 coverslips.

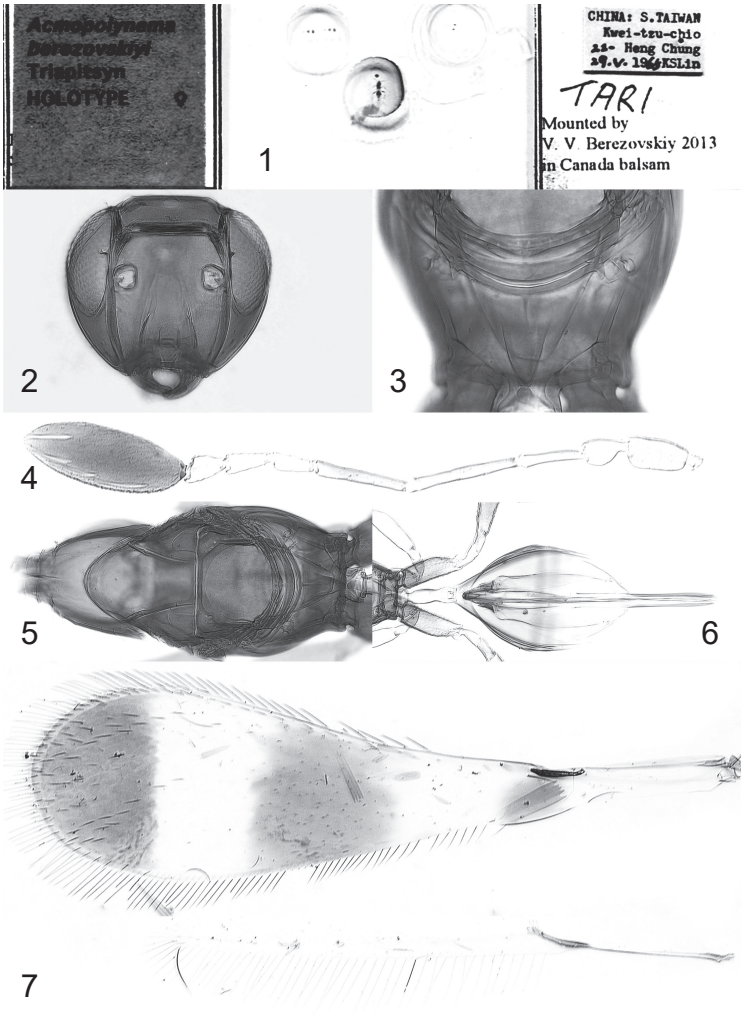
Description. Female (holotype). Body mostly brown except petiole and apical gastral terga light brown; scape and pedicel light brown; F1–F3 brown, F4–F6 pale yellowish, and clava dark brown; legs mostly brown except apical half or so of metafemur and metatibia and also apical tarsomeres dark brown, other tarsomeres light brown.

Head as in Fig. 2.

Antenna (Fig. 4). Scape with cross-ridges, 1.9 times as long as wide in lateral view (excluding radicle); pedicel shorter than F1; F2 longest funicular segment, F3 much longer than the following funicular segments; F4–F5 subequal in length, F6 the widest funicular segment; all funicular segments without mps; clava 2.7 times as long as wide, with 9 mps.

Mesosoma (Fig. 5) smooth. Pronotum mediolongitudinally subdivided only in its anterior half, with several pairs of short setae. Mesoscutum slightly wider than long, a little longer than scutellum. Axilla with 1 weak seta and 3 foveae along its margin with scutellum. Scutellum with a row of small frenal foveae; scutellar placoid sensilla close to anterior margin of scutellum. Propodeum (Fig. 3) with V-shaped submedian carinae not reaching its anterior margin, extending only to about 2/3 of its length, and with a very short, inconspicuous median carina at anterior margin only.

Fore wing (Fig. 7) 3.6 times as long as wide; marginal vein with 1 dorsal macrochaeta; longest marginal seta about 0.25 times maximum width of wing; disc with 3 brown bands: first band short and behind and a little beyond marginal vein, second band the widest and about in the middle of disc, and third band at wing's apex (extending to its apical mar-



Figs. 1–7. *Acmopolynema berezovskiyi*, female (holotype): 1. Slide; 2. Head in frontal view; 3. Propodeum; 4. Antenna; 5. Mesosoma; 6. Metasoma; 7. Fore and hind wings.

gin and occupying about 0.18 of wing's total length); approximately basal half of disc bare, the remainder of disc sparsely setose, with short modified setae of type F (Schauff 1981) mostly on the middle brown band and also a few on the hyaline area between the middle and apical brown bands, normal setae in apical 3/10 of disc, somewhat arranged in 3 irregular rows but more numerous at wing's apex. Hind wing (Fig. 7) 22.5 times as long as wide; disc hyaline, longest marginal seta 2.8 times maximum width of wing.

Protibia with 2 rows of 9 or 11 conical sensilla; metacoxa and metafemur with reticulate sculpture.

Metasoma (Fig. 6). Petiole shorter than metacoxa. Ovipositor occupying almost entire length of gaster, markedly exserted beyond its apex (by 0.35 times own total length), 1.7 times length of metatibia.

Measurements (mm). Mesosoma 0.683; mesoscutum: 0.24; scutellum: 0.184; petiole 0.203; gaster 0.768; ovipositor 1.076. Antenna: scape (excluding radicle) 0.107; pedicel 0.07; F1 0.097; F2 0.182; F3 0.158; F4 0.07; F5 0.07; F6 0.07; clava 0.273. Fore wing 1.47

: 0.403; longest marginal seta 0.1. Hind wing 1.168 : 0.052; longest marginal seta 0.147. Mesotibia: 0.455; metatibia: 0.627.

Male. Unknown.

Diagnosis. *A. berezovskiyi* is similar to the eastern Palaearctic and Oriental species *Acmopolynema tachikawai* Taguchi, 1971, described from Japan and also known from India, Malaysia, and Sri Lanka, to which it keys in Triapitsyn & Berezovskiy (2007). A modified couplet for that key to females of the Oriental and Australasian species of *Acmopolynema* is provided here to differentiate this new species from *A. tachikawai*, as follows.

1 Fore wing disc with a conspicuous apical dark band, occupying at most about 1/5 of wing's length and extending to its apical margin (as in Fig. 7) ····· 1'

– Fore wing disc either hyaline or with different color patterns ····· 2

1'(1) F2 and F3 notably darker than F1, F6 dark brown (Triapitsyn & Berezovskiy 2007, p. 10, Fig. 1); apical brown band on fore wing disc occupying about 0.13 of wing's total length ····· ····· *A. tachikawai* Taguchi, 1971

– F2 and F3 concolorous with F1, F6 pale yellowish (Fig. 4); apical brown band on fore wing disc occupying about 0.18 of wing's total length ····· ····· *A. berezovskiyi*, sp. nov.

Etymology. The species is named after Mr. Vladimir Vasil'evich Berezovskiy (Laguna Hills, California, USA), fellow fairyfly taxonomist with special interest in the genus *Acmopolynema* Ogloblin, 1946 and a dedicated volunteer at the UCRC.

Hosts. Unknown.

***Acmopolynema bimaculatum* Subba Rao, 1989**

A. bimaculatum Subba Rao: Triapitsyn and Berezovskiy, 2007: 22 (Pingtung Co.).

Material examined. Taiwan: Chiayi Co., Chiayi, 27.v.1970, K. S. Lin (1 female, TARI). Paomenszu (2 km S of Keelung), 11.x.1957, F. L. Ye (1 female, TARI). Pingtung Co., Pingtung, 10.iii.1970, K. S. Lin, in rice field (1 female, TARI). Taipei City: 15–30.ix.1963, K. S. Lin (2 females, TARI); 16–31.x.1963, K. S. Lin (1 female, TARI). Tsaoshan (20 km N of Taipei City): 5.x.1957, K. S. Lin (1 female, TARI); 28.x.1957, K. S. Lin (1 female, TARI).

****Acmopolynema indochinense* (Soyka, 1956)**

Material examined. Taiwan: Pingtung Co., Kenting National Park, Hengchun, Kueitzuchiao (as "Kuraru, Heng Chung"), 22–29.v.1965, K. S. Lin (1 female, TARI). Taipei City: 1–12.vii.1963, K. S. Lin (1 female, TARI); viii.1963, K. S. Lin (2 females, TARI); iii.1970, K. S. Lin (1 female, TARI); x.1972, K. S. Lin (1 female, TARI).

Extralimital material examined. Brunei, Belait District, Rumah Teraja, 4°16.983'N 114°25.372'E, 40 m, 2.vii.2010, J. Mottern (1 female, UCRC). China, Guangdong, Cuangzhou, v.1983, Z. Bouček [1 female, Natural History Museum, London, England, UK (BMNH)]. Indonesia, Bali Island, Tabanan, Baturiti Candikuning, 25–27.viii.1999, M. I. Wibawa [2 females, R. M. Bohart Museum of Entomology, University of California, Davis, California, USA (UCDC)]. Thailand, Surat Thani, Sok River, N of Hwy 401, 8°54'26"N, 98°31'59"E, 20–21.ii.2005, D. Yanega (1 male, UCRC). Vietnam, Ho Chi Minh City (as Saigon), xi.1949, J. Barbier [1 female, Muséum national d'Histoire naturelle, Paris, France (MNHN)].

Comments. *A. indochinense* is newly recorded here from Brunei.

***Acmopolynema longicoxillum* Xu and Lin, 2002**

A. longicoxillum Xu and Lin: Triapitsyn and Berezovskiy, 2007: 35 (Taipei).

***Acmopolynema orchidea* Triapitsyn and Berezovskiy, 2007**

A. orchidea Triapitsyn and Berezovskiy, 2007: 31–32 [Orchid Island (Lan Yü)].

***Acmopolynema* spp.**

Material examined. Taiwan: Nantou Co., Ren'ai Township, Wushe, 1,150 m, 15.v.1983, H. Townes [1 male, American Entomological Institute, Gainesville, Florida, USA (AEI)]. Orchid Island (Lan Yü), 200 m, 5–9.vii.1991, C. K. Starr (1 female, CNC). Pingtung Co., Kenting National Park: Hengchun, Kueitzuchiao (as "Kuraru, Heng Chung"), 22–29.v.1965, K. S. Lin (1 female, 1 male, TARI); 230 m, 5–11.v.1991, C. K. Starr, S. M. Wu (3 males, CNC). Taipei City: Kuanyinshan (W of Taipei City), 5.x.1957, K. S. Lin (1 female, TARI); Tsaoshan (20 km N of Taipei City), 1.v.1955, K. S. Lin (1 male, TARI); 6–15.xii.1957, K. S. Lin (1 male, TARI); viii.1963, K. S. Lin (3 males, TARI).

***Alaptus immaturus* Perkins, 1905**

A. immaturus Perkins: Triapitsyn, 2017a: 35 ("Peishankeng", Taichung).

Hosts in Taiwan: undetermined Psocoptera on various plants (Triapitsyn 2017a).

***Alaptus* sp.**

Material examined. Taiwan, Nantou Co., Pilu-Chi Hydrological Station, ca. 24.23°N 121.3°E, ca. 2,300 m, 15–30.vi.1997, M. M. Yang (1 female, UCRC).

******Anagroidea marina* **Triapitsyn and Berezovskiy, 2002** (Fig. 19)

Material examined. Taiwan, Taichung, Hsuchsan (above Shan Liu), Gieu Hut, 3,200 m, 8–10.v.1991, A. Smetana (2 females, CNC).

Extralimital material examined. China, Sichuan, 20 km N of Sabde, 29°35'N 102°23'E, "3,200 m" (according to Google Earth, the actual altitude at these coordinates is 2,488 m), 12–14.vii.1998 (3 females, CNC). Japan: Hokkaido Island, Hokkaido Prefecture, 20 km N of Akkeshi, Bekanbeushi Marsh, 100 m, 15.viii.1996, L. Masner (1 female, CNC). Honshu Island: Aichi Prefecture, Shitara, Uradani, 900 m, 27.vi–3.vii.1994, K. Yamagishi, beech forest (1 female, CNC). Iwate Prefecture, Kawai, Yoshibezawa, 1,050 m, 12–17.viii.1991, A. Smetana (1 female, CNC). Kyushu Island, Fukuoka Prefecture, Mt. Tachibana: 6–12.v.1979, K. Yamagishi (1 brachypterous female, CNC); 20.v–9.vi.1979, K. Yamagishi (1 female, CNC). Republic of Korea (South Korea), Kangwon-do, Pyengchang, Donam, Byungnae, 24.ix.1998, J.-Y. Choi (1 female, UCRC). Russia, Primorskiy kray, Ussuriyskiy rayon, Gornotayozhnoye, 12.vii.2000, M. V. Michailovskaya (1 male, UCRC).

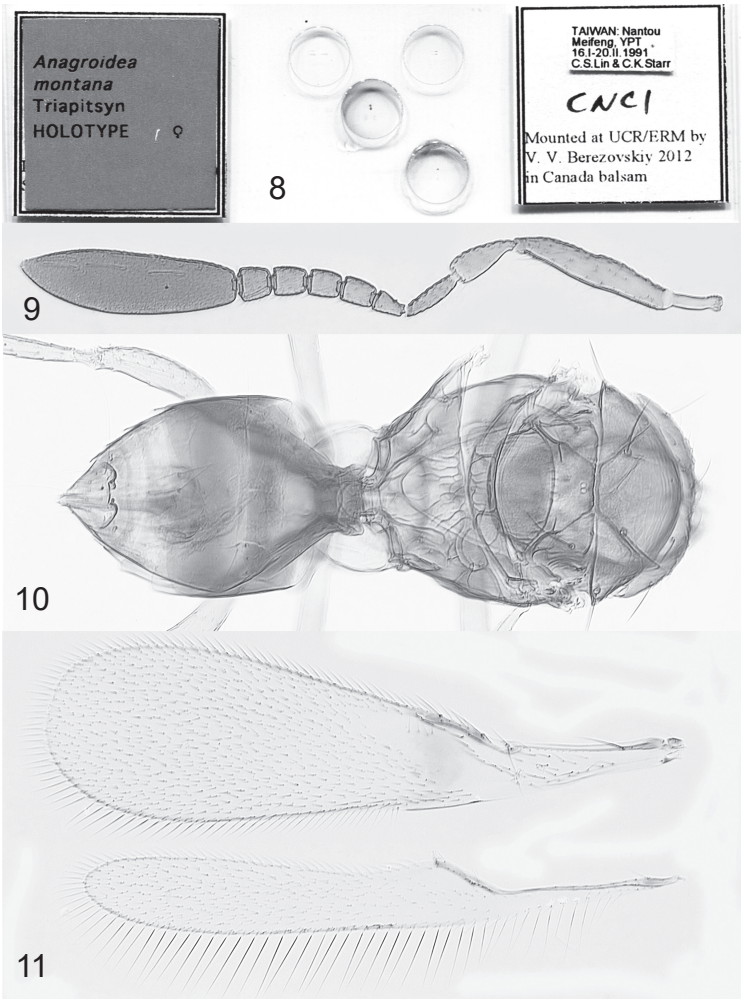
Comments. *A. marina* was recently reported from Tibet and Yunnan, China by Jin and Li (2016); it is newly recorded here from Japan and Republic of Korea.

******Anagroidea montana* **Triapitsyn, sp. nov.** (Figs. 8–18)

Type material. Holotype female (CNC) on slide (Fig. 8), labeled: 1. "TAIWAN: Nantou Meifeng, YPT, 16.I-20.II.1991 S. C. Lin & C. K. Starr"; 2. "CNCI Mounted at UCR/ERM by V. V. Berezovskiy 2012 in Canada balsam"; 3. [magenta] "*Anagroidea montana* Triapitsyn HOLOTYPE ♀." The holotype is complete, dissected under 4 coverslips. Paratypes: Taiwan: Hualien Co., Tayuling, 12–15.ix.1980, K. S. Lin, C. H. Wang (1 female on point, TARI). Nantou Co.: "Forestry Station," 7.v.1997 (1 female on point, UCRC). Meifeng: 2,150 m, viii.1984, K. S. Lin, K. C. Chou (1 female on point, TARI); 16.i–20.ii.1991, S. C. Lin, C. K. Starr, yellow pan trap (1 male on slide, CNC).

Additional material examined. China, Beijing, Mentougou District, Xiaolongmen Station, 39°59.22'N 115°31.48'E, 1,095 m, 28.vii.2002, G. Melika (1 female, UCRC). This non-type, extralimital, dry-mounted specimen is more similar in color to *A. montana* than to *A. marina*, so it is provisionally identified as the former species.

Description. Female (holotype). Body mostly brown except trabeculae and petiole dark brown; radicle light brown and remainder of antenna brown; legs mostly light brown ex-



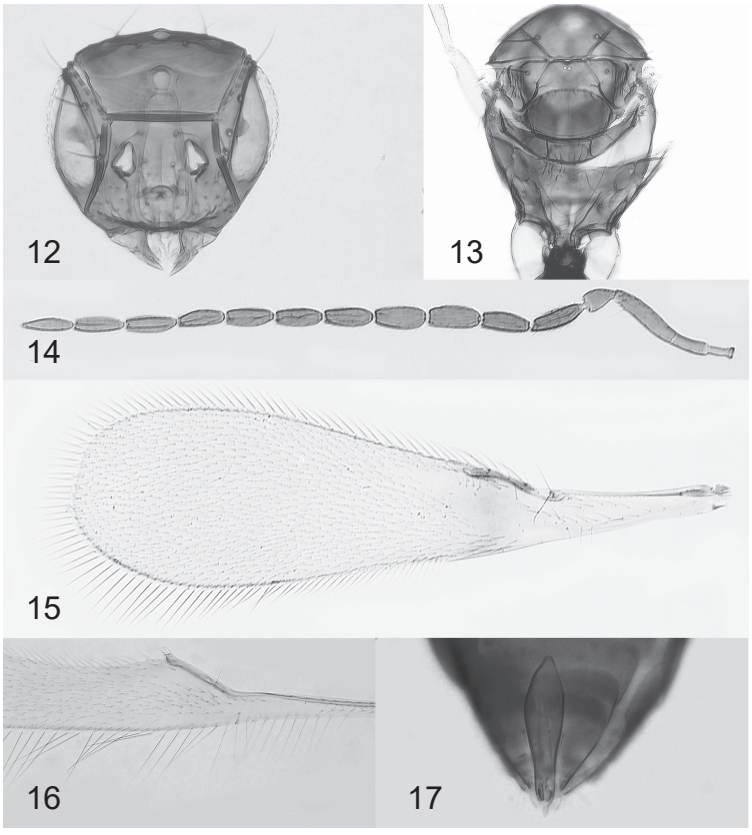
Figs. 8–11. *Anagroidea montana*, female (holotype): 8. Slide; 9. Antenna; 10. Mesosoma and metasoma; 11. Fore and hind wings.

cept meso- and metacoxa notably lighter.

Head (Fig. 12) with transverse trabecula slightly above mid level of eyes. Vertex transversely striate, face almost smooth; toruli slightly above lower level of eyes. Mandible bidentate, its length about 0.2 times of head height.

Antenna (Fig. 9) with radicle narrow and smooth, remainder of scape 5.1 times as long as wide and faintly sculptured; pedicel slightly longer than F1 (the longest funicular segment); F2–F6 subequal in length (F2 the shortest and narrowest among them), F1 much longer than wide, F2 longer than wide, F3–F5 slightly longer than wide, and F6 slightly wider than long; F1 and F2 without mps, F3–F6 apparently each with 2 mps; clava 3.4 times as long as wide, with 7 mps, almost as long as funicle.

Mesosoma (Fig. 10) with pronotum faintly sculptured, narrow medially in dorsal view and with several strong setae. Mesoscutum with reticulate sculpture in anterior half or so and with less conspicuous, faint cell-like sculpture in posterior half or so, with a pair of strong adnotaular setae and a strong seta at posterolateral angle. Axilla faintly sculptured, with a



Figs. 12–17. *Anagroidea montana*: 12. Female head in frontal view (holotype); 13. Male mesosoma (paratype); 14. Male antenna (paratype); 15. Male fore wing (paratype); 16. Base of male hind wing (paratype); 17. Male genitalia (paratype).

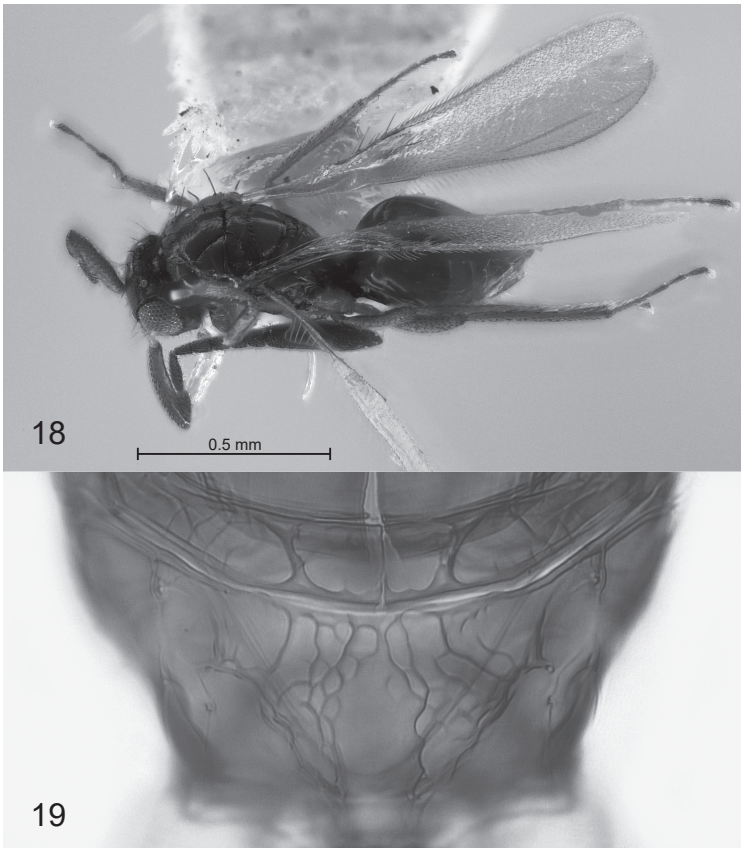
very strong seta. Scutellum faintly sculptured, a little longer than mesoscutum, frenal line with a row of large but inconspicuous foveae; scutellar placoid sensilla very close to anterior margin and touching each other. Dorsellum reticulate. Propodeum with a pattern of submedian carinae and reticulate sculpture (mainly medially at its anterior margin), and with one pair of weak setae mediolaterally. Propodeal spiracle small. Mesophragma broadly U-shaped, not reaching posterior margin of propodeum.

Fore wing (Fig. 11) 3.5 times as long as wide; disc faintly infuscate throughout (brownish), more so behind marginal vein; base of disc with a large bare area behind and partially beyond marginal and stigmal veins, and apical half of disc densely setose; longest marginal seta about 0.25 times maximum width of wing. Hind wing (Fig. 11) 7.8 times as long as wide; disc slightly infuscate and densely, more or less uniformly, setose beyond venation, with about 12–13 irregular rows of setae in the broadest part; longest marginal seta about 1.0 times maximum width of wing.

Coxae faintly reticulate.

Metasoma (Fig. 10). Petiole about 3 times as wide as long. Gaster shorter than mesosoma; first gastral tergum and first gastral sternum with sclerotized ridges and carinae; ovipositor short, occupying about half of gaster length, not exserted beyond gastral apex, about 0.6 times length of metatibia.

Measurements of the holotype (mm). Mesosoma 0.344; mesoscutum: 0.088; scutellum: 0.102; petiole 0.022; gaster 0.283; ovipositor 0.142. Antenna: scape (excluding radicle) 0.172;



Figs. 18–19. *Anagroidea* spp.: 18. *Anagroidea montana*, female habitus in dorsolateral view (paratype, Forestry Station, Nantou Co., Taiwan); 19. *Anagroidea marina*, female propodeum (Gornotayozhnoye, Primorskiy kray, Russia).

pedicel 0.07; F1 0.06; F2 0.03; F3 0.036; F4 0.033; F5 0.036; F6 0.035; clava 0.228. Fore wing 0.833 : 0.237; longest marginal seta 0.06. Hind wing 0.8 : 0.102; longest marginal seta 0.1. Mesotibia: 0.23; metatibia: 0.245.

Variation (dry-mounted paratype from "Forestry Station" in Nantou Co.). Body length 0.99 mm. Clava only a little darker than funicle; gaster more or less concolorous with head and mesosoma (brown).

Male (paratype). Similar to female except for the normal sexually dimorphic features such as antenna and genitalia, and the following. Head with less pronounced, rather faint sculpture on vertex and face. Antenna (Fig. 14) brown, longer than body, with scape about 6 times as long as wide, slightly longitudinally striate; flagellomeres roughly subequal in length (F1 the longest), longer than wide, each with several mps. Mesosoma (Fig. 13) less sculptured than in female. Fore wing (Fig. 15) 3.6 times as long as wide; longest marginal seta 3.8 times maximum wing width. Hind wing (Fig. 16) 8.5 times as long as wide; longest marginal seta 1.1 times maximum width of wing. Gaster almost entirely dark brown. Genitalia (Fig. 17) length 0.133 mm.

Diagnosis. The new species keys to couplet 4 in Triapitsyn & Berezovskiy (2002), together with *A. marina* and *Anagroidea himalayana* (Mani and Saraswat, 1973). A modified couplet for their key is therefore is given below, which applies to females only. In addition to the characters mentioned in it, female *A. montana* differs from that of *A. marina*, to which it is most similar, in the relatively light-

er color of the funicle, which is light brown to brown and contrastingly lighter than the clava.

4(3) Base of fore wing disc with a well-defined row of 6 or 7 setae very close to submarginal vein (Triapitsyn & Berezovskiy 2002, p. 5, Fig. 5) ····· ·····*A. himalayana* Mani and Saraswat, 1973

– Base of fore wing disc with several setae only between submarginal vein and the long submedian row of setae (Triapitsyn & Berezovskiy 2002, p.9, Figs. 9 and 11) ····· 5

5(4) Head and mesosoma dark brown; F1 slightly longer than (or at most about as long as) pedicel; propodeum sculptured as in Fig. 19 ····· ·····*A. marina* Triapitsyn and Berezovskiy, 2002

– Head and mesosoma brown (Fig. 18); F1 slightly shorter than pedicel; propodeum sculptured as in Fig. 10 ····· ····· *A. montana*, sp. nov.

Etymology. The species name is an adjective referring to its occurrence in the mountains.

Hosts. Unknown.

Comments. The following specimens of *A. himalayana* were examined: Nepal: Bagmati Zone, Phulchowki (also spelled as Phulcoki or Phulchoki), 2,600 m, 13.x.1983, A. Smetana, screen sweeping in old oak forest (1 female, CNC). Dhawalagiri (Dhaulagiri) Zone, Goropani Pass (also spelled as Ghoropani, Gorepani, or Ghorepani), 2,850 m, 5.x.1983, A. Smetana, screen sweeping (1 female, CNC). Langtang, 1,950 m, 13.iv.1985 (1 female, CNC). This species is newly recorded from Nepal.

******Anagrus (Anagrella)* **sp.**

Material examined. Taiwan, Pingtung Co., Kenting National Park, 210 m, 11–17.v.1991, C. K. Starr, S. M. Wu, pan trap in secondary forest (1 female, CNC).

Comments. This specimen, which possibly represents an undescribed species, is similar to *Anagrus* (*Anagrella*) *albiclava* Chiappini and Lin, 1998 in having a white clava of the female antenna, from which it differs by presence of an incomplete row of setae in the middle of the fore wing disc (absent in *A. albiclava*).

***Anagrus* (*Anagrus*) *frequens* Perkins, 1905**

?*Anagrus flaveolus* Perkins Waterhouse, 1913: Chen and Yu, 1989: 460–461 (illustration of a female antenna, key).

A. (*Anagrus*) *frequens* Perkins: Triapitsyn and Beardsley, 2000: 33 (no locality data except "Formosa").

Material examined. Taiwan: Taipei City, City Park, 19.xii.1990–8.i.1991, J. T. Chao (1 female, CNC). Taichung, Wufeng, TARI, 24°01'52.4"N 120°41'34.2"E, 76 m: 5–7.x.2016, S. V. Triapitsyn, yellow pan traps in wild rice field (1 female, UCRC); 6–11.x.2016, S. V. Triapitsyn, H.-T. Shih, Malaise trap in wild rice field (3 females, UCRC).

Host in Taiwan. *Perkinsiella* sp. (Delphacidae) (Triapitsyn & Beardsley 2000).

Comments. The female antenna illustrated by Chen & Yu (1989, p. 460, Fig. 11) under "*A. flaveolus*" definitely belongs to a species from the *atomus* species group of the nominate subgenus of *Anagrus* and fits those specimens of *A. frequens* that lack mps on F3; indeed, among the three specimens recently collected in the wild rice field at TARI, one female has a mps on F3 on both antennae, one only on one antenna, and one lacks mps on both antennae.

***Anagrus* (*Anagrus*) *nilaparvatae* Pang and Wang, 1985**

?*Anagrus* sp.: Lin 1974: 93–96 [Pingtung, Taipei; key, illustration of a fore wing (consistent with that of *A. nilaparvatae*)], 99 (descriptive notes and history of previous records and misidentifications in Taiwan).

A. incarnatus Haliday, 1833: Chen and Yu, 1989: 459–461 (Pingtung, Taichung, Taipei; illustrations, key); Chen, 1993:

267–273 (Changhua Co., Chiayi Co., Nantou Co., Taichung); Chiappini *et al*., 1996: 560 (indicated probable misidentifications).

?*Anagrus flaveolus* Waterhouse, 1913: Chu and Hirashima, 1981: 35–36; Sahad and Hirashima, 1984: 57 (Chiayi Co.); Chiappini *et al*., 1996: 586 (indicated previous misidentifications).

A. (*Anagrus*) *nilaparvatae* Pang and Wang: Triapitsyn and Berezovskiy, 2004a: 21 ("Antei").

Material examined. Taiwan, Taichung, Wufeng, TARI, 24°01'52.4"N 120°41'34.2"E, 76 m: 5–7.x.2016, S. V. Triapitsyn, yellow pan traps in wild rice field (1 female, UCRC); 6–11.x.2016, S. V. Triapitsyn, H.-T. Shih, Malaise trap in wild rice field (5 females, UCRC).

Hosts in Taiwan. *Laodelphax striatella* (Fallén, 1826) (Chen 1993) and *N. lugens* (Stål, 1854) (Delphacidae) (Lin 1974; Chu & Hirashima 1981; Chen & Yu 1989; Chen 1993; Triapitsyn & Berezovskiy 2004a), as well as *Nephotettix cincticeps* (Uhler, 1896) (Cicadellidae) (Lin 1974; Chu & Hirashima 1981).

Comments. It is possible that *Anagrus* sp. mentioned by Lin (1974) was a complex of several species although most likely the bulk of those were *A. nilaparvatae*, but I could not locate any of his specimens identified as such in TARI to verify that; in fact, I could not find any specimens of *Anagrus* there despite conducting thorough searches both in 2013 and 2016. It is also possible that these had been borrowed by Dr. Bing-huei Chen during preparation of his publication with the redescription of *A. incarnatus* from Taiwan (Chen & Yu 1989) and then never returned to the collection so after his retirement these got lost (or misplaced) somehow. Their detailed illustrations of the latter species, combined with a redescription (which is not without some mistakes), leave little doubt that they dealt with *A. nilaparvatae*.

As indicated by Triapitsyn & Berezovskiy (2004a, p. 21), *A. incarnatus* of Sahad and Hirashima, 1984: 46–50 definitely belongs to *A. nilaparvatae* [also see discussion in Triapitsyn & Berezovskiy (2004a) and Triapitsyn (2013c, 2015b)] while *A. flaveolus* of Sahad and Hirashima, 1984: 55–58 likely belongs to those specimens of *A. nilaparvatae* that are lacking a mps on F3 of the female antenna. Without access to their missing voucher specimens, the identity of *A. nigriventris* Girault, 1911 of Sahad and Hirashima, 1984: 52–55 from Japan and Republic of Korea remains unclear; it is definitely not the true *A. nigriventris* which is a New World species also known from the Hawaiian Islands (Triapitsyn 2015b) because according to the illustration in Sahad & Hirashima (1984: 54, their Fig. 18B), their "*A. nigriventris*" lacks adnotaular setae on the midlobe of the mesoscutum which are always present in the true *A. nigriventris*. Thus their species belongs to the very difficult *A. incarnatus* complex of *Anagrus* discussed by Triapitsyn & Berezovskiy (2004a) and Triapitsyn (2015b).

Anagrus (*Anagrus*) *setosus* Chiappini and Lin, 1998

A. (*Anagrus*) *setosus* Chiappini and Lin: Triapitsyn and Berezovskiy, 2004a: 9 (Nantou Co.).

Anagrus (*Anagrus*) sp.

Material examined. Taiwan, Taichung, Wufeng, TARI, 24°01'52.4"N 120°41'34.2"E, 76 m, 6–11.x.2016, S. V. Triapitsyn, H.-T. Shih, Malaise trap in wild rice field (1 female, UCRC).

Comments. This interesting specimen, which likely represents an undescribed species, belongs to the *A. brocheri* Schulz, 1910 complex of the *incarnatus* species group of the nominate subgenus of *Anagrus* (Triapitsyn 2015b) and is most similar to (and yet different from in the fore wing chaetotaxy) *A*. (*Anagrus*) *insularis* Dozier, 1936, which is known from the Hawaiian Islands (Triapitsyn & Beardsley 2000).

***Anagrus* (*Paranagrus*) *optabilis* (Perkins, 1905)**

A. (*Paranagrus*) *optabilis* (Perkins): Miura *et al*., 1981: 44–49 (Taipei and numerous localities in central and southern Taiwan); Sahad and Hirashima, 1984: 68 (Chiasien, Chiayi Co., Tainan); Chen and Yu, 1989: 460–461 (illustration, key); Chiappini *et al*., 1996: 556; Triapitsyn and Beardsley, 2000: 29 (no locality data except "Formosa"); Triapitsyn and Berezovskiy, 2004a: 7 ("Antei").

Hosts in Taiwan. *L. striatella* (Fallén, 1826) (Miura *et al*. 1981), *N. lugens* (Stål, 1854) (Miura *et al*. 1981; Triapitsyn & Berezovskiy 2004a), *Perkinsiella* sp. (Triapitsyn & Beardsley 2000), and *Sogatella furcifera* (Horváth, 1899) (Miura *et al*. 1981) (Delphacidae).

***Anaphes nipponicus* Kuwayama, 1932**

A. nipponicus Kuwayama: Thompson, 1958: 568 (record needs confirmation).

***Anaphes* spp.**

Material examined. Taiwan, Nantou Co.: "Forestry Station," 7.v.1997 (2 males, UCRC). Pilu-Chi Hydrological Station, ca. 24.23°N 121.3°E, ca. 2,300 m, 15–30.vi.1997, M. M. Yang (3 females, UCRC).

Comments. The earlier reports of *Anaphes* sp. from Taiwan from eggs of *N. cincticeps* and *N. lugens*, summarized by Chu & Hirashima (1981), are without any doubt erroneous host records because species of the genus *Anaphes* Haliday, 1833 do not parasitize eggs of either Cicadellidae or Delphacidae.

The examined specimens from Nantou Co. belong to two different species: the females have a much wider fore wing than the males.

***Arescon sparsiciliatus* Jin and Li, 2016**

A. ?*sparsiciliatus* Jin and Li: Triapitsyn, 2016: 146 (Nantou Co.).

Material examined. Taiwan: Taichung, Wufeng, TARI, 24°01'52.4"N 120°41'34.2"E, 76 m, 6–11.x.2016, S. V. Triapitsyn, H.-T. Shih, Malaise trap in wild rice field (1 female, UCRC). Taipei City, viii.1963, K. S. Lin (1 male, TARI).

***Arescon* spp.**

Material examined. Taiwan: Orchid Island (Lan Yü), 200 m, 5–9.vii.1991, C. K. Starr (1 male, CNC). Taichung, Wufeng, TARI, 24°01'52.4"N 120°41'34.2"E, 76 m, 6–11.x.2016, S. V. Triapitsyn, H.-T. Shih, Malaise trap in wild rice field (1 male, UCRC).

****Australomymar* ?*gressitti* (Doutt, 1955)**

Material examined. Taiwan, Pingtung Co., Kenting National Park, 5–8.iv.1991, C. K. Starr, S. M. Wu (1 female, CNC, determined by J. T. Huber).

Comments. Indeed, this specimen fits the original description of *A. gressitti* in most aspects except the exserted part of the ovipositor seems to be relatively longer, about 0.4 mm and about the same length as gaster, whereas in the holotype of this species from Tol Island [Chuuk (Truk) Islands, Caroline Islands, Chuuk (Truk) State, Federated States of Micronesia] the exserted part of the ovipositor is 0.28 mm and about the same length as mesosoma (Doutt 1955).

****Australomymar* spp.**

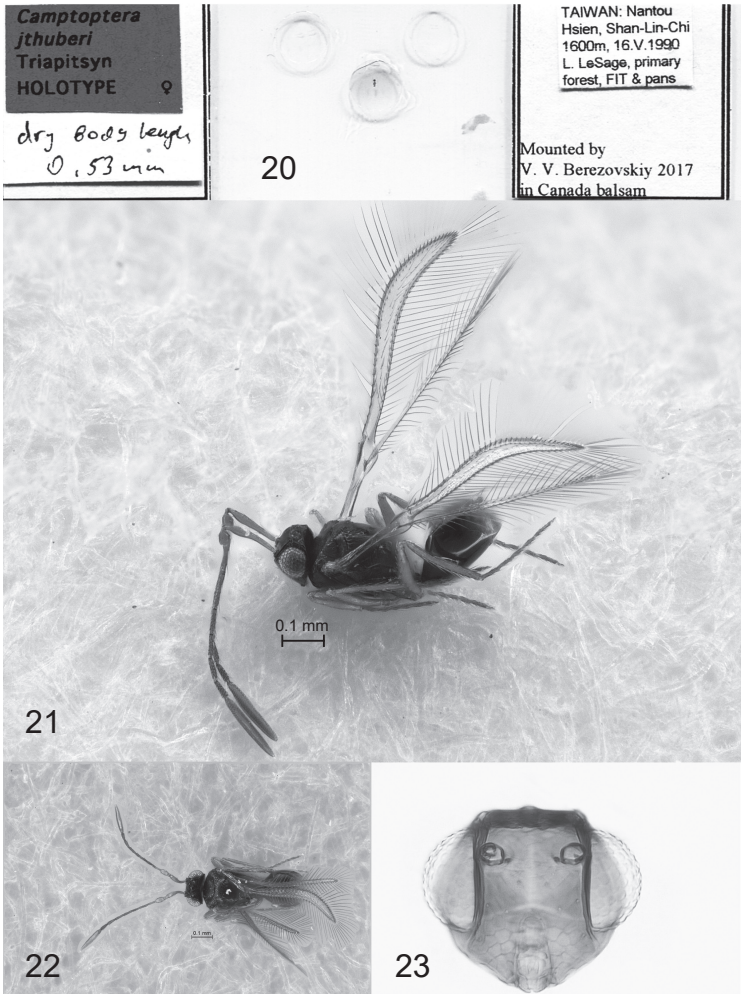
Material examined. Taiwan: Nantou Co.: Meifeng, 2,130 m, 10–17.vii.1993, A. Smetana (1 female, CNC). Sun Moon Lake, Tehuache, 800–900 m, 6.vi.1990, J. M. Heraty (1 male, CNC). Zhushan, Shan Lin Xi, 1,600 m, 16.v.1990, L. LeSage (3 females, 2 males, CNC). Pingtung Co., Tengchih, Medium Altitude Experimental Station, 23°05.75'N 120°47.37'E, 1,660 m, L. Masner: 3–5.vi.2008 (1 female, 1 male, CNC); 4.vi.2008 (2 males, CNC); 7–9.vi.2008 (1 female, CNC).

Comments. These specimens were identified as belonging to this genus by Dr. J. T. Huber. Most of those from Nantou Co. have two transverse brownish bands on the fore wing disc in both sexes and thus seem to be somewhat similar to *A. vietnamicum* Narendran and

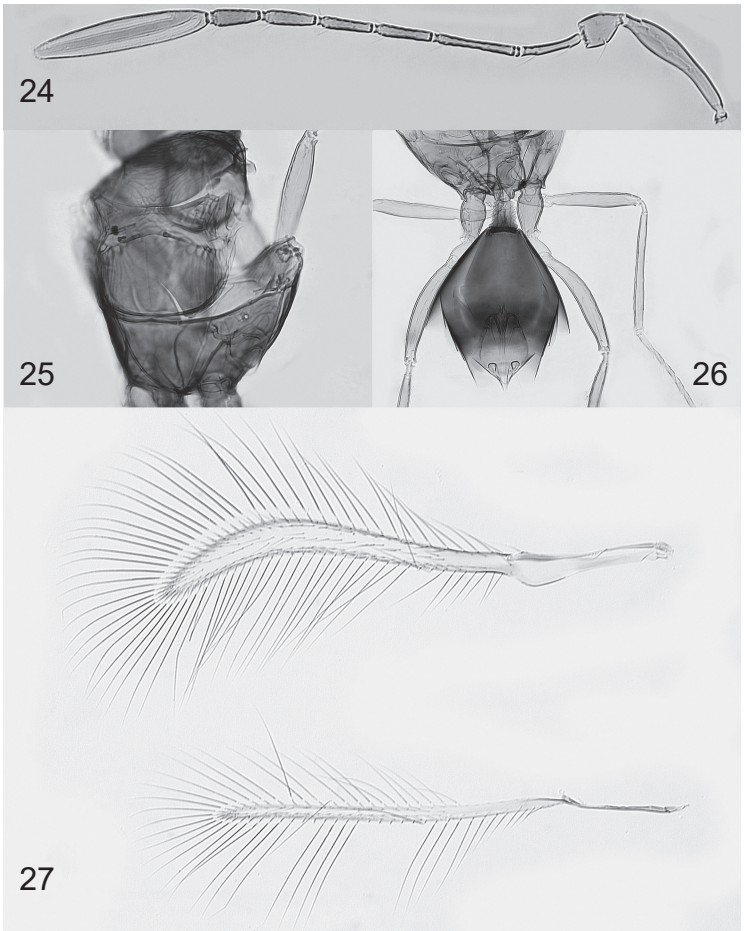
Anjana, 2013 from Vietnam which also has this feature, particularly in female sex; clava of the female antenna is white. Unfortunately, the antennae of the single known female of the latter species (the holotype) are incomplete (Narendran & Anjana 2013), so the color of its clava is unknown. The other specimens from Taiwan likely belong to two undescribed species.

****Camptoptera jthuberi* Triapitsyn, sp. nov.** (Figs. 20–30)

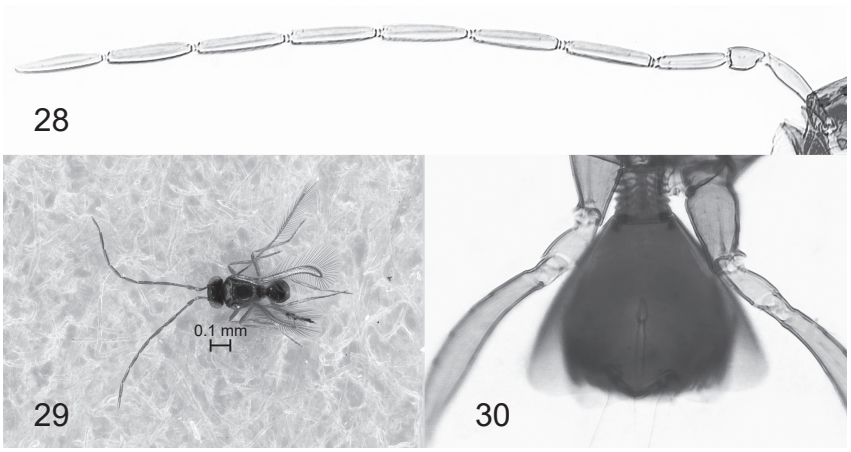
Type material. Holotype female (CNC) on slide (Fig. 20), labeled: 1. "TAIWAN: Nantou Hsien, Shan-Lin-Chi 1,600m, 16.V.1990 L. LeSage, primary forest, FIT & pans"; 2. "CNC Mounted by V. V. Berezovskiy 2017 in Canada balsam"; 3. [magenta] "*Camptoptera jthuberi* Triapitsyn HOLOTYPE ♀." The type locality is Shan Lin Xi, Zhushan, in Nantou Co. The holotype (Fig. 21) was remounted from a card; it is almost complete (missing one fore leg) and dissected under 3 coverslips. Paratypes: Taiwan: Kaohsiung City, Shanping, 640 m, 11–20. iv.1988, R. L. Davidson, J. E. Rawlins, C. W. Young, pan traps (1 male on card and 1 male



Figs. 20–23. *Camptoptera jthuberi*, female: 20. Slide (holotype); 21. Habitus in dorsolateral view (dry-mounted holotype prior to being slide-mounted); 22. Habitus in dorsal view (paratype, Shan Lin Xi, Zhushan, Nantou Co., Taiwan); 23. Head in frontal view (holotype).



Figs. 24–27. *Camptoptera jthuberi*, female: 24. Antenna (holotype); 25. Mesosoma (paratype, Shan Lin Xi, Zhushan, Nantou Co., Taiwan); 26. Propodeum and metasoma (holotype); 27. Fore and hind wings (holotype).



Figs. 28–30. *Camptoptera jthuberi*, male (paratype, Wushe, Nantou Co., Taiwan): 28. Antenna; 29. Habitus in dorsal view (prior to being slide-mounted); 30. Metasoma.

on slide, CNC). Nantou Co.: Meifeng, 2,150 m, 19.ii–18.viii.1991, C. K. Starr, C. S. Lin, pan traps (2 females on cards and 1 female on slide, CNC). Wushe, 1,100 m, 27.v.1990, J. M. Heraty, deciduous forest, H074 [collector's code] (1 male on card, CNC). Zhushan, Shan Lin Xi [as Shan-Lin-Chi], 1,600 m, 16.v.1990, L. LeSage, primary forest, flight intercept trap and pan traps (4 females on cards, 2 females on points, and 1 female on slide, CNC; 1 female on slide, UCRC).

Description. Female (holotype). Body (Fig. 21) dark brown (mesosoma slightly lighter than head or metasoma); scape, pedicel and clava light brown, funicle brown except base of F1 light brown; legs mostly light brown except metatibia a little darker (mostly brown).

Head (Fig. 23). Face with faint cell-like sculpture, more conspicuous below lower level of eyes and above toruli, vertex with a more reticulate sculpture, and occiput striate.

Antenna (Fig. 24) with scape minus short radicle 5.6 times as long as wide; pedicel shorter than F1; funicle 7-segmented (F2 ring-like), F1 shorter than F3 (the longest funicular segment), slightly longer than F4–F6 and longer than F7 (the widest funicular segment), ratios of F3 length to F1 length and F3 length to F4 length 1.4; clava 5.5 times as long as wide, with 4 very long mps, a little longer than combined length of F5–F7.

Mesosoma (as in Fig. 25). Mesoscutum reticulate, with notauli short, incomplete (only at its anterior margin); scutellum notably longitudinally striate on the sides and with a faint, inconspicuous cell-like sculpture medially. Propodeum with very strong, wide apart, complete (extending to propodeal anterior margin) submedian ridges and an incomplete lateral carina originating at an angle to each submedian ridge (not extending to propodeal anterior margin), but otherwise mostly hardly sculptured.

Fore wing (Fig. 27) 13.9 times as long as wide, curving strongly towards wing's apex; longest marginal seta 4.4 times maximum wing width; disc with a rather strong brownish tinge and 1 (in smaller specimens) or 2 (in larger specimens) irregular median rows of setae besides adnotaular rows of setae. Hind wing (Fig. 27) about 29 times as long as wide; disc slightly infumate, with 2 rows of setae besides admarginal rows of setae; longest marginal seta 8.8 times maximum wing width.

Gaster (Fig. 26) shorter than mesosoma. Petiole (Fig. 26) 1.1 times wider than long, shorter than metacoxa, strongly ridged and without a lateral lamella. Ovipositor barely exserted beyond apex of gaster, occupying 0.45 of its length, and 0.6 times length of metatibia.

Measurements of the holotype (mm). Body (of the dry-mounted, critical point dried specimen prior to slide-mounting) 0.53; head (of the dry-mounted specimen prior to slide-mounting) 0.099; mesosoma 0.303; petiole 0.052; gaster 0.267; ovipositor 0.128. Antenna: scape plus radicle 0.142; pedicel 0.043; F1 0.06; F2 0.003; F3 0.083; F4 0.058; F5 0.055; F6 0.052; F7 0.049; clava 0.183. Fore wing 0.763 : 0.055; longest marginal seta 0.242. Hind wing 0.707 : 0.024; longest marginal seta 0.212. Metatibia: 0.215.

Variation (paratypes, as in Fig. 22). Body length of the dry-mounted, critical point dried specimens 0.445–0.595 mm. Antenna with scape minus radicle 5.5–7.1 times as long as wide; ratio of F3 length to F1 length 1.35–1.4; clava 5.0–5.1 times as long as wide. Submedian ridges on propodeum sometimes not extending to propodeal anterior margin (almost reaching it). Fore wing 13.8–16.7 times as long as wide, longest marginal seta 3.9–4.8 times maximum wing width. Hind wing 28–29 times as long as wide, longest marginal seta 7.9–8.1 times maximum wing width. Ovipositor 0.5–0.6 times length of metatibia.

Male (paratypes). Body length (of the card-mounted, critical point dried specimens) 0.41–0.53 mm. Similar to female except for the normal sexually dimorphic features such as antenna and genitalia. Body (Fig. 29) entirely dark brown, antenna and legs brown. Antenna (Fig. 28) with flagellum 10-segmented (F2 and

F4 ringlike, very short and thus inconspicuous, other flagellomeres much longer than wide and about as long as scape except F1 a little shorter than scape), scape about 5.2 times as long as wide. Mesosoma much longer than metasoma. Fore wing 15.3 times as long as wide. Genitalia (Fig. 30) length 0.07 mm.

Diagnosis. *C. jthuberi* probably does not belong to the informal *cardui* species group of *Camptoptera* Foerster, 1856, as defined by Triapitsyn (2014b), even though it somewhat resembles some of its members. It differs from the only described Oriental species from this group, *C. kannada* Subba Rao, 1989 from India (Triapitsyn 2017b), and also from the western Palaearctic and Nearctic species *C. cardui* (Foerster, 1856) and the eastern Palaearctic species *C. zagvozdka* Triapitsyn, 2014 in having very strong, wide apart, complete submedian ridges on the propodeum which are easily visible even on dry-mounted specimens (the propodeum is without any ridges or defined submedian carinae in *C. kannada* and *C. zagvozdka*, and with faint, often almost indistinct, wide apart linear submedian carinae slightly narrowing towards the metanotum but not extending to it in *C. cardui*). The new species also has a strongly ridged petiole, thus being similar to the rather common Oriental and Eastern Palaearctic species *C. matcheta* Subba Rao, 1989, from which it differs in having a much longer flagellum of the female antenna and a narrower, less setose fore wing (Triapitsyn 2017b). Rather, *C. jthuberi* is most similar to *C. concava* Taguchi, 1972, described from Bohol Island, the Philippines (Taguchi 1972). Unfortunately, the single known specimen of the latter species, the holotype female, is lost. Female of *C. jthuberi* differs from that of *C. concava* mainly in the proportions of some funicle segments, particularly in having F3 notably longer than F1 (at least 1.35 times) whereas in *C. concava* F1 is almost the same length as F3 (F3 1.08 times length of F1), as illustrated by Taguchi (1972) and also calculated from the measurements provided in its original description.

Etymology. The species is named after Dr. John T. Huber (CNC) who identified specimens of the type series to genus and kindly let me borrow them.

Hosts. Unknown.

***Camptoptera matcheta* Subba Rao, 1989**

Material examined. Taiwan, Nantou Co.: Meifeng, 2,130 m, 10–17.vii.1993, A. Smetana (1 female, CNC). Zhushan, Shan Lin Xi, 1,600 m, 16.v.1990, L. LeSage (1 female, CNC).

***Camptoptera sakaii* Taguchi, 1977**

C. sakaii Taguchi, 1977b: 143–144 (Kenting National Park, Pingtung Co.; holotype female lost from EUMJ).

Comments. Female of this species was recently redescribed by Rehmat & Anis (2014) based on specimens from India. However, its true identity can only be revealed when a well matching female is collected at or near the type locality and designated as a neotype. Although its original description has good illustrations of the female antenna and mesosoma, unfortunately Taguchi (1977b) did not provide a detailed illustration or description of fore wing disc chaetotaxy, which may be important for recognition of *C. sakaii*.

***Camptoptera stoptera* Triapitsyn, 2014**

C. stoptera Triapitsyn, 2014b: 73 (Nantou Co.).

Material examined. Taiwan, Nantou Co., Lienhuatse, 750 m, 20.ii–18.iii.1991, C. K. Starr, C. S. Lin (1 female, CNC).

***Camptoptera taiwana* Taguchi, 1977**

C. taiwana Taguchi 1977b: 144–145 (Kenting National Park, Pingtung Co.; holotype female lost from EUMJ).

***Camptoptera* spp.**

Material examined. Taiwan: Nantou Co.: Lienhuatse, 750 m, 20.ii–18.iii.1991, C. K. Starr, C. S. Lin (1 female, CNC). Meifeng,

16.i–20.ii.1991, C. S. Lin, C. K. Starr (2 females, CNC). Orchid Island (Lan Yü), 200 m, 5–9.vii.1991, C. K. Starr (1 female, CNC). Pingtung Co., Kenting National Park, C. K. Starr, S. M. Wu: 5–8.iv.1991 (5 females, 1 male, CNC); 210–230 m, 5.v.1991 (4 males, CNC); 210 m, 11–17.v.1991 (1 male, CNC).

Comments. Five of the six males from the Kenting National Park belong to the group of species which corresponds to the former genus *Eomymar* Perkins, 1912, in which only F2 is ring-like while F4 is about as long as F3 or F5 (Triapitsyn 2014b), and the five females from there belong to three different, undetermined morphospecies none of which, unfortunately, matches well the original descriptions and illustrations of either *C. sakaii* or *C. taiwana*.

******Camptopteroides* **sp(p). (Fig. 31)**

Material examined. Taiwan: Kaohsiung City, Shanping, 640 m, 1–10.iv.1988, R. L. Davidson, J. E. Rawlins, C. W. Young (1 female, CNC). Nantou Co., Zhushan, Shan Lin Xi, 1600 m, 16.v.1990, L. LeSage (1 female, CNC).

Comments. Both females were identified as members of the genus *Camptopteroides* Viggiani, 1974 by Dr. J. T. Huber. The macropterous specimen from Kaohsiung City is not *C. alata* Lin, 1999 because it has a banded fore wing, and that from Nantou Co. is strongly brachypterous (Fig. 31).

******Cleruchus* **spp.**

Material examined. Taiwan: Nantou Co., Zhushan, Shan Lin Xi, 1,600 m, 16.v.1990, L. LeSage (1 female, CNC). Pingtung Co., Tengchih, Medium Altitude Experimental Station, 23°05.75'N 120°47.37'E, 1,660 m, 4.vi.2008, L. Masner (1 female, CNC). Taichung, Anmashan, 2,230 m, 11–15.v.1992, A. Smetana (1 female, CNC).

Comments. These specimens were identified as members of the genus *Cleruchus* Enock, 1909 by Dr. J. T. Huber. The females from Nantou Co. and Taichung belong to a different species than the female from Pingtung Co.

******Cosmocomoidea atra* **Foerster, 1841**

Material examined. Taiwan: Pingtung Co., Kenting National Park, Hengchun, Kueitzuchiao (as "Kuraru, Heng Chung"), 22–29.v.1965, K. S. Lin (8 females, TARI). Taichung, Shengkuang, 1,850 m, 20.ix.1968, K. S. Lin (1 female, TARI). Taipei City: 6–15.xii.1957, K. S. Lin (1 female, TARI); 13–17.v.1963, K. S. Lin (1 female, TARI); viii.1963, K. S. Lin (1 female, TARI); 9–25.i.1964, K. S. Lin (1 female, TARI); 1–19.ii.1964, K. S. Lin (1

Fig. 31. *Camptopteroides* sp., brachypterous female (Shan Lin Xi, Zhushan, Nantou Co., Taiwan): habitus in dorsal view.

female, TARI); 11–21.iv.1964, K. S. Lin (1 female, TARI).

******Cosmocomoidea kikimora* **Triapitsyn, 2013**

Material examined. Taiwan, Taipei City: Hsintien, 31.iii.1963, K. S. Lin (2 females, TARI); 1–12.vii.1963, K. S. Lin (1 female, TARI); 4–19.xi.1963, K. S. Lin (2 females, TARI); 20–30.xii.1963, K. S. Lin (1 female, TARI); 9–18.i.1964, K. S. Lin (1 female, TARI); 1–19.ii.1964, K. S. Lin (1 female, TARI); vi.1967, K. S. Lin (1 female, TARI).

******Cosmocomoidea kodaiana* **Mani and Saraswat, 1973**

Material examined. Taiwan, Chiayi Co., Alishan, 2,450 m, 16.vi.1965, K. S. Lin (1 female, TARI). Taipei City: Hsintien, 31.iii.1963, K. S. Lin (3 females, TARI); 5–6.iv.1963, K. S. Lin (2 females, TARI); 15–19.iv.1963, K. S. Lin (1 female, TARI); Hsintien, 6.iv.1964, K. S. Lin (1 female, TARI); 11–21.iv.1964, K. S. Lin (2 females, TARI). Tsaoshan (20 km N of Taipei City), 14.viii.1963, K. S. Lin (1 female, TARI). Wulai (20 km S of Taipei City), 1.vi.1962, W. H. Ting (2 females, TARI).

***Cosmocomoidea ?latipennis* (Girault, 1911)**

Gonatocerus (*Cosmocomoidea*) ?*latipennis*: Triapitsyn 2013b: 150 (Nantou Co.).

Material examined. Taiwan, Taipei City, 20–30.xii.1963, K. S. Lin (1 female, TARI).

******Cosmocomoidea tenuis* **Xu, Lin and Hu, 2016 (Fig. 32)**

Material examined. Taiwan: Taichung, Shengkuang, 1,850 m, 20.ix.1968, K. S. Lin (4 females, 1 male, TARI). Taipei City, Hsintien, 31.iii.1963, K. S. Lin (1 female, TARI).

Description. Male (slide-mounted specimen from Taiwan, Fig. 32). Body length 1.28 mm. Similar to female, as described by Aishan *et al*. (2016), except for the normal sexually dimorphic features such as antenna and genitalia. Antenna with pedicel small, about as long as wide; flagellomeres more or less subequal in length (F1 the shortest and the widest), each with many mps. Fore wing 2.8 times as long as

Fig. 32. *Cosmocomoidea tenuis*, male (Shengkuang, Taichung, Taiwan): habitus (a slide mount).

wide, longest marginal seta 0.25 times maximum wing width; hind wing about 18 times as long as wide, longest marginal seta 2.3 times maximum wing width. Gaster relatively shorter than in female, shorter than mesosoma.

Comments. This species was previously known from the females only, all collected in Fujian, China (Aishan *et al*. 2016).

***Cosmocomoidea* sp.**

Gonatocerus (*Cosmocomoidea*) sp.: Triapitsyn and Shih, 2014: 675–676 (Taichung).

Host in Taiwan: *Kolla paulula* (Walker, 1858) (Cicadellidae) (Triapitsyn & Shih 2014).

******Erythmelus* **(*Erythmelus*) *nuinu* Triapitsyn, 2003**

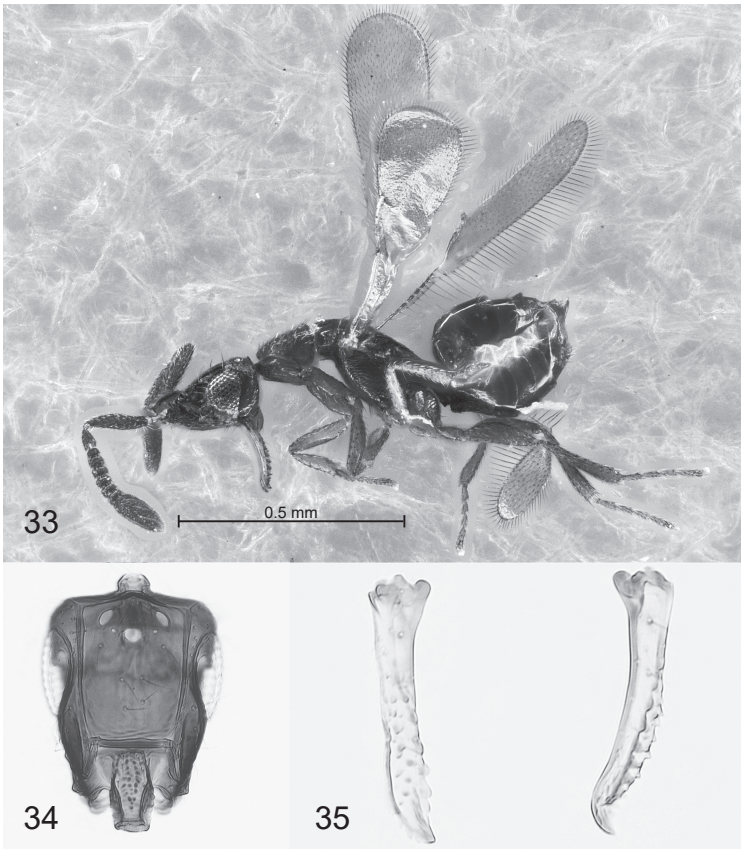
Material examined. Taiwan, Nantou Co., E of Shankan, 2,000–2,200 m, 28.v.1990, J. M. Heraty (1 female, CNC).

******Erythmelus* **(*Parallelaptera*) *funiculi* (Annecke and Doutt, 1961)**

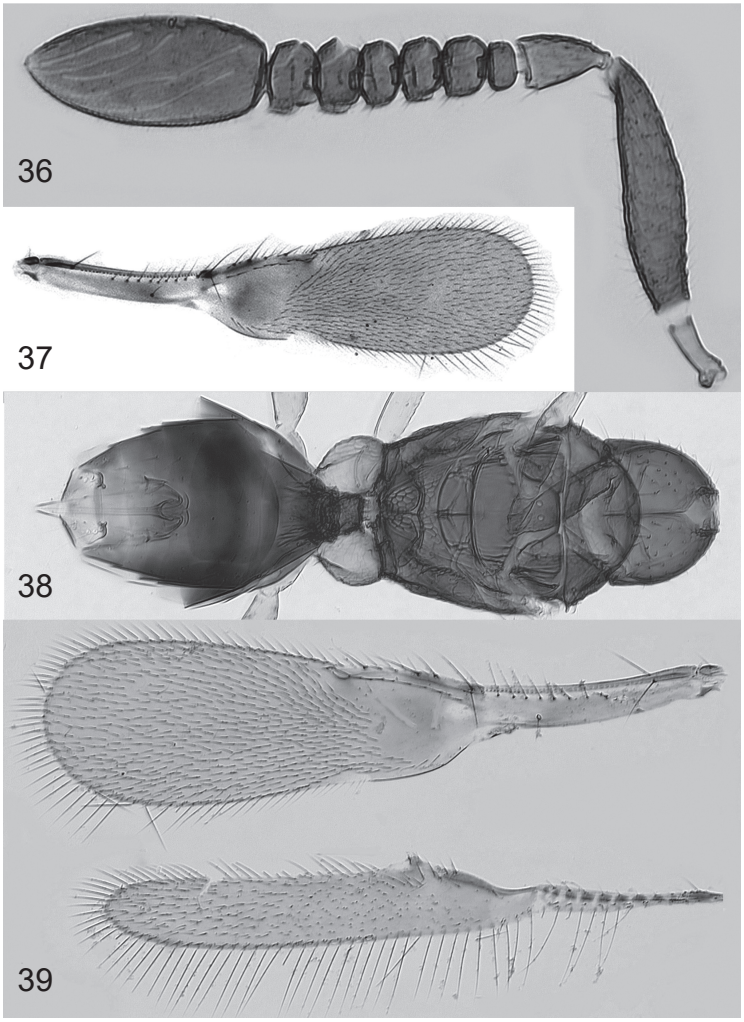
Material examined. Taiwan, Taichung, Hsuchsan (above Shan Liu), Gieu Hut, 3,200 m, 8–10.v.1991, A. Smetana (1 female, CNC).

******Eubroncus scutatus* **Manickavasagam and Palanivel, 2015 (Figs. 33–43)**

Material examined. Taiwan: Taichung, Hsinkangshan (above Chengkung), 350 m, 25–28.iv.1995, A. Smetana (1 female, 2 males, CNC). Taipei City: 14–22.xi.1990, C. K. Starr, yellow pan trap (1 female, CNC); City Park, 1–19.xii.1990, J. T. Chao, yellow pan trap (1 female, CNC).

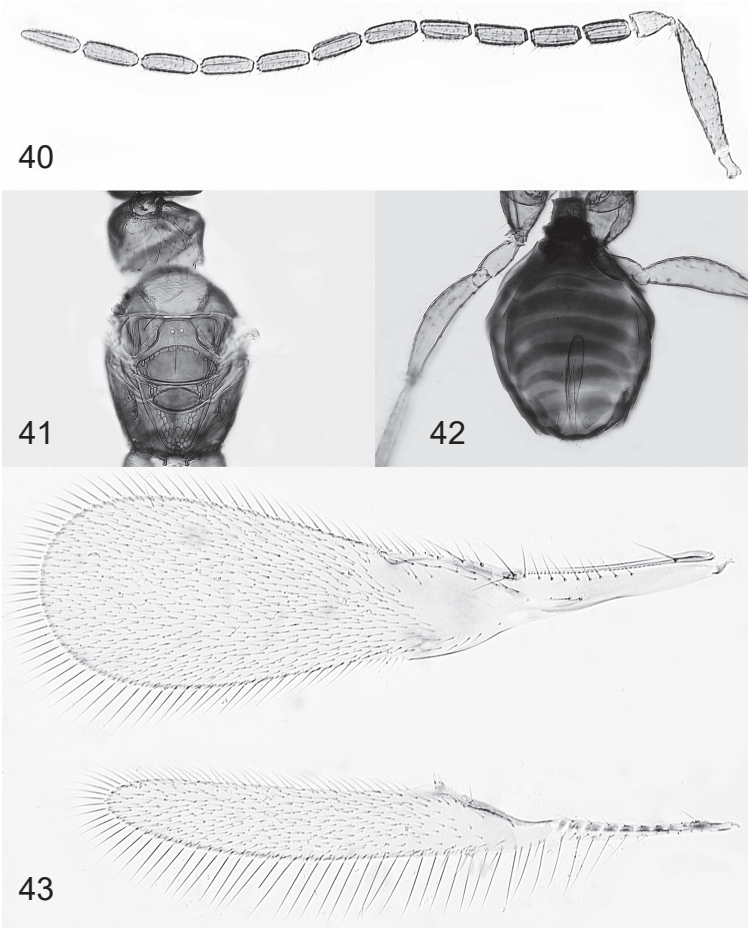


Figs. 33–35. *Eubroncus scutatus*, females (Taipei City, Taiwan): 33. Habitus in lateral view; 34. Head in dorsal view; 35. Mandibles.



Figs. 36–39. *Eubroncus scutatus*, females: 36. Antenna (Taipei City, Taiwan); 37. Fore wing (paratype, Mulakadu, Kallakuruchi Taluk, Tamil Nadu, India; photograph courtesy of S. Manickavasagam); 38. Mesosoma and metasoma (Taipei City, Taiwan); 39. Fore and hind wings (Taipei City, Taiwan).

Redescription (specimens from Taiwan). Female. Body length 0.83–0.89 mm (dry-mounted specimens, as in Fig. 33). Dark brown: head, mesosoma laterally, propodeum dorsally, petiole; brown: rest of body, antenna (except radicle); light brown: mandible (Fig. 35), radicle, and legs. Head (Fig. 34) with vertex smooth. Antenna (Fig. 36) with scape minus radicle with reticulate sculpture, 4.2 times as long as wide; funicular segments short and transverse, F1 without mps, F2–F6 each with 2 mps; clava 2.1–2.2 times as long as wide, with 7 mps, a little longer than combined length of F2–F6. Mesosoma sculptured as in Fig. 38 (midlobe of mesoscutum and propodeum medially with reticulate sculpture). Fore wing (Fig. 39) about 4.0 times as long as wide; disc infuscate throughout, with a row of long setae behind submarginal vein and with characteristic several discolored marginal setae on posterior margin next to a small bare area behind stigmal vein; longest marginal seta 0.34 times maximum width of wing. Hind wing (Fig. 39) 8.4 times as long as wide; disc infuscate and



Figs. 40–43. *Eubroncus scutatus*, male [Hsinkangshan (above Chengkung), Taichung, Taiwan]: 40. Antenna; 41. Mesosoma; 42. Metasoma; 43. Fore and hind wings.

with a few somewhat longer setae behind and just beyond apex of venation; longest marginal seta 1.2 times maximum width of wing. Coxae with reticulate sculpture. Petiole about as long as wide, strongly reticulate. Gaster (Fig. 38) shorter than mesosoma; first gastral tergum and first gastral sternum with numerous sclerotized ridges; ovipositor about as long as mesotibia, exserted slightly beyond gastral apex.

Male. Body length (dry-mounted specimens) 0.825–0.925 mm. Similar to female except for the normal sexually dimorphic features such as antenna and genitalia, and the following. Body mostly dark brown except pronotum and most of gaster brown; scape and pedicel brown, flagellum dark brown; legs light brown. Antenna (Fig. 40) with scape minus radicle reticulate, 5.0 times as long as wide; flagellomeres more or less subequal in length (the apical ones slightly longer), longer than wide, each with several mps. Mesosoma sculptured as in Fig. 41. Fore wing (Fig. 43) 3.5 times as long as wide and its disc without a well-defined small bare area behind stigmal vein next to several discolored marginal setae on posterior margin; longest marginal seta 0.36 times maximum wing width. Hind wing (Fig. 43) 8.7 times as long as wide and its disc without a few somewhat longer setae behind and just beyond apex of venation; longest marginal

seta about as long as maximum width of wing. Genitalia (Fig. 42) length 0.14 mm.

Diagnosis. I assign these interesting specimens to *E. scutatus* Manickavasagam and Palanivel, 2015, previously known only from India (Anwar *et al*. 2015; Palanivel & Manickavasagam 2015). In the female specimens from Taiwan, the discal setae along the posterior margin of the fore wing extend to before the level of the middle of the marginal vein (Fig. 39) whereas those appear to extend only past the level of the middle of the marginal vein in the fore wing illustrated by Palanivel & Manickavasagam (2015, p. 7154, Fig. 7). That, however, was due to some of the discal setae being rubbed off as these are present in the paratype female of *E. scutatus* (Fig. 37) and also in other conspecific specimens from India (S. Manickavasagam, personal communication). It differs from *E. prodigiosus* (Yoshimoto, Kozlov and Trjapitzin, 1972) in having a longer scape (minus radicle) of the female antenna, which is 4.2 times as long as wide (about 3.0 times as long as wide in *E. prodigiosus*, Fig. 68), and also in having the midlobe of the mesoscutum with a reticulate sculpture (almost entirely smooth in *E. prodigiosus*, Fig. 69) and the pronotum faintly divided mediolongitudinally (entire in *E. prodigiosus*). The feature of pronotum being or being not divided mediolongitudinally, however, may not be the best practical character for separation of the species of *Eubroncus* Yoshimoto, Kozlov and Trjapitzin, 1972 because it is often difficult to figure out correctly. For instance, it is used in the keys by Jin & Li (2014) and Palanivel & Manickavasagam (2015) to separate *E. indicus* Hayat and Khan, 2009 from West Bengal, India, which has been known from the single holotype whose body is dry-mounted on a card and described without providing the important diagnostic details of sculpture, particularly on vertex and mesosoma (Hayat & Khan 2009).

Recently, the diagnosis of *E. indicus* was updated by Anwar *et al*. (2015) based on the holotype female. I have examined the following specimens of *E. indicus*: Nepal, Dhawalagiri (Dhaulagiri) Zone, Goropani Pass, East ridge (also spelled as Ghoropani, Gorepani, or Ghorepani), ca. 3,000 m, 7.x.1983, A. Smetana, mountain meadow, screen sweeping (2 females, 2 males, CNC). It is a new record for the country. In the females, whose body length is about 1.05 mm, the vertex is almost smooth (with a faint, inconspicuous, cell-like sculpture better seen in slide-mounted specimens), the pronotum is with a trace of an inconspicuous, short median carina at the anterior margin only which possibly could be interpreted, in slide-mounted specimens, as a "faint longitudinal carina medially" in Jin & Li's (2014) key, the mesoscutum, scutellum and propodeum medially are mostly almost smooth and with 8 large foveae at the frenal line medially (Fig. 44), the fore wing (Fig. 46) is 3.75 times as long as wide and its disc has a row of long setae behind submarginal vein, and the hind wing (Fig. 46) is very wide (7.5 times as long as wide) and its disc with a group of very long setae behind and just beyond the apex of venation. Thus, these specimens also fit very well the description and illustrations of *E. hani* Jin and Li, 2014 from the similar altitude in Yunnan, China (Jin & Li 2014); therefore, *E. hani* syn. nov. is hereby synonymized under *E. indicus*.

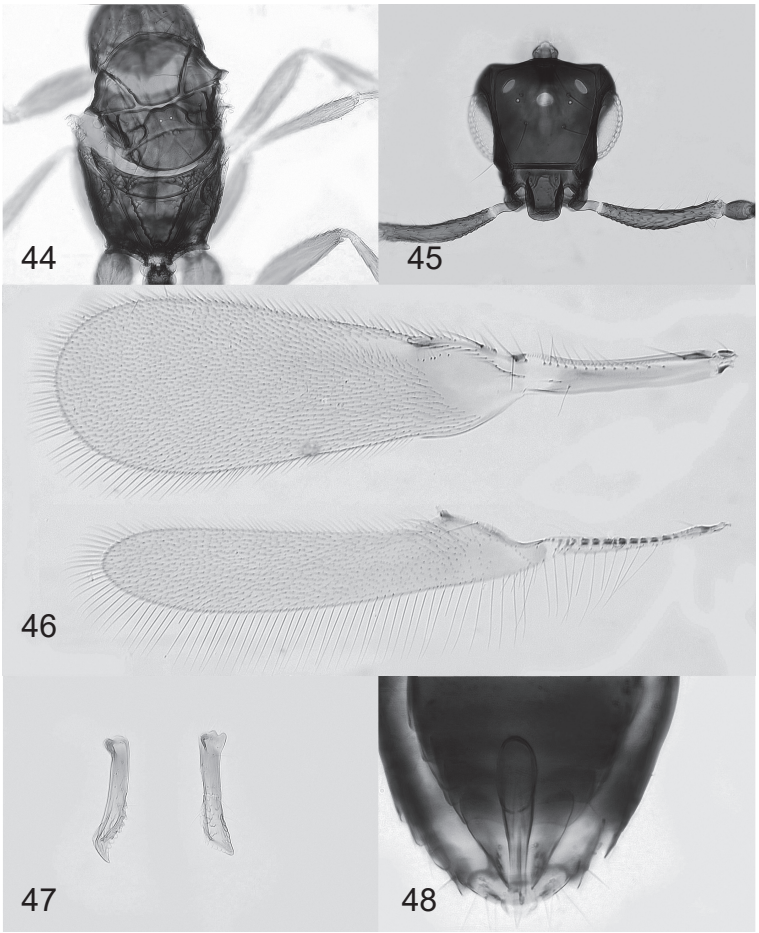
Eubroncus scutatus differs from *E. tibetanus* Jin and Li, 2014 from Tibet, China, to which it keys in Jin & Li (2014), and also from *E. vertexus* Jin and Li, 2014 from Yunnan in having an entirely smooth vertex, from *Eubroncus orientalis* Yoshimoto, Kozlov and Trjapitzin, 1972 (to which it is very similar and quite likely conspecific) only in having a relatively longer ovipositor (about 1.0 times length of mesotibia versus about 0.7 times in *E. orientalis*, but we do not know the range of variation of this character in both nominal taxa), and from *E. indicus* in having a reticulate propodeum medially and presence of strong ridges on the first gastral tergum [these are absent in the latter species according to

Hayat & Khan (2009) and Anwar *et al*. (2015)], so its first gastral tergum is nearly smooth. The males of *E. scutatus* and *E. orientalis* are practically indistinguishable; the latter species probably has a wide distribution range in the Oriental region.

Hosts. Unknown.

Comments. I have examined the following extralimital specimen of *E. prodigiosus*: Russia, Primorskiy kray, Ussuriyskiy rayon, Gornotayozhnoye, 12.vii.2000, M. V. Michailovskaya (1 male, UCRC).

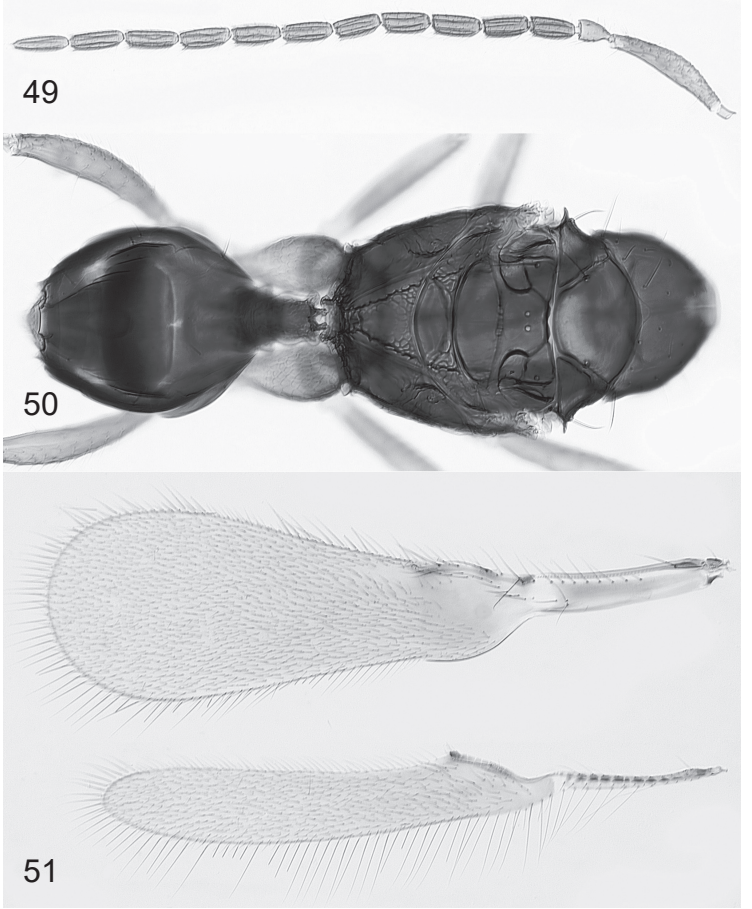
The previously unknown male of *E. indicus* is described, as follows (specimens from Nepal). Length of head (only one specimen measured) 0.267 mm, length of mesosoma plus metasoma 0.916–0.972 mm (slide-mounted specimens). Similar to female, as described by Hayat & Khan (2009) and re-diagnosed and illustrated by Anwar *et al*. (2015), except for the normal sexually dimorphic features such as antenna and genitalia, and the following. Body dark brown to black; scape and pedicel brown, flagellum dark brown; legs brown except metacoxa light brown. Vertex (Fig. 45) almost smooth (with a very faint, inconspicuous cell-like sculpture better visible under high magnification in slide-mounted specimens); mandibles as in Fig. 47. Antenna (Fig. 49) with scape reticulate, 5.2–6.0 times as long as wide;



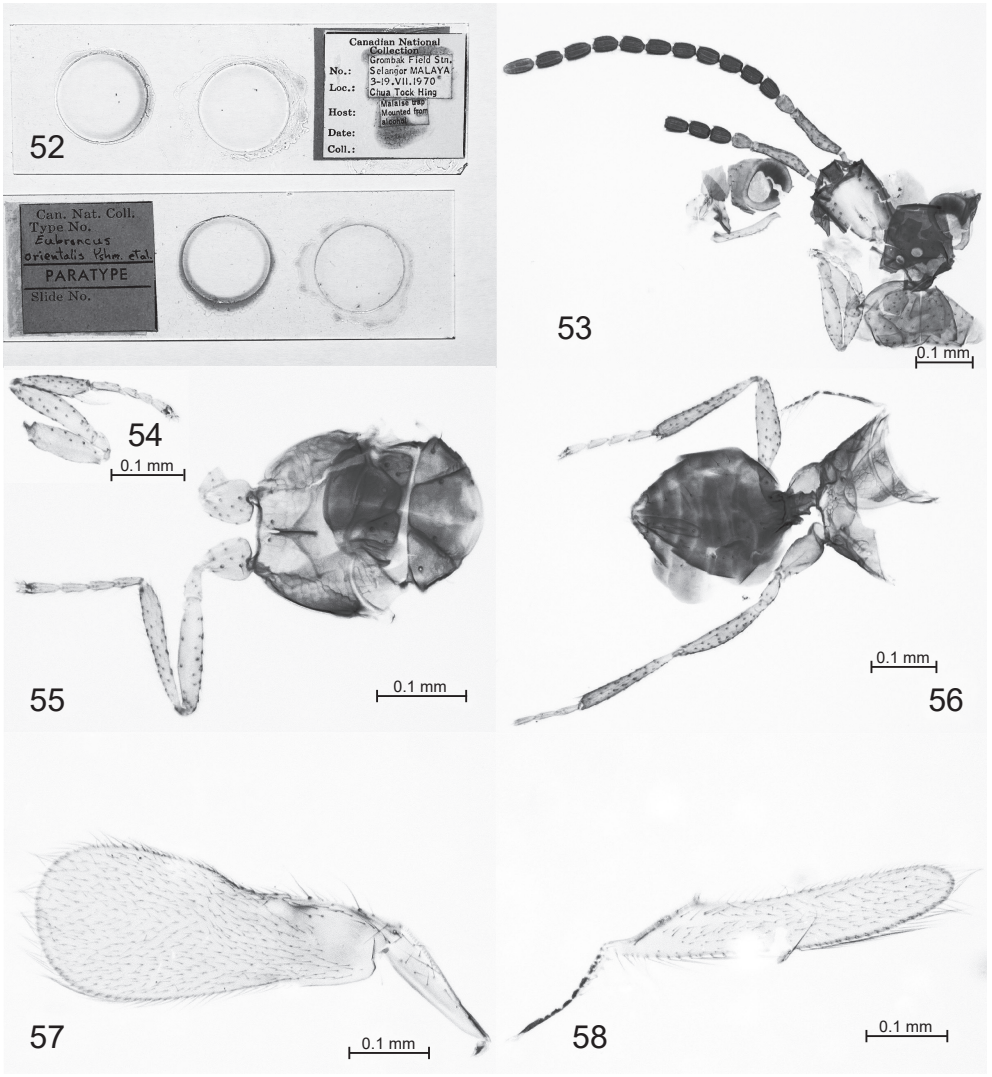
Figs. 44–48. *Eubroncus indicus* (Goropani Pass, Dhawalagiri Zone, Nepal): 44. Female mesosoma; 45. Male head and scape; 46. Female fore and hind wings; 47. Male mandibles; 48. Male genitalia.

flagellomeres more or less subequal in length (the apical ones slightly longer), longer than wide, each with several mps. Mesosoma sculptured as in Fig. 50. Fore wing (Fig. 51) 3.5–3.6 times as long as wide and its disc with a row of long setae behind submarginal vein; longest marginal seta about 0.34 times maximum wing width. Hind wing (Fig. 51) 8.0–8.1 times as long as wide; longest marginal seta about as long as maximum width of wing; disc with much shorter setae behind and just beyond the apex of venation than in female (Fig. 46). First gastral sternum with prominent ridges; genitalia (Fig. 48) length 0.149–0.157 mm.

Using this opportunity, the male of *E. orientalis* is redescribed and illustrated in detail to complement the original description, and its previously unknown female is described. This is necessary to include the type species of the genus in the key below; it was omitted from the world keys to females of *Eubroncus* of Jin & Li (2014) and Palanivel & Manickavasagam (2015). I have examined its holotype male (on point) and a male paratype (dissected on a slide, Figs. 52–58), both in CNC, the holotype labeled: 1. "Grombak Field Stn. Selangor MALAYA 3-19.VII.1970 Chua Tock Hing"; 2. "Malaise trap Mounted from alcohol"; 3. "HOLOTYPE *Eubroncus orientalis* Yshm *et al*."; 4. "HOLOTYPE CNC No. 19026." The paratype has the same data (Fig. 52). The correct type locality of *E. orientalis* is University



Figs. 49–51. *Eubroncus indicus*, male (Goropani Pass, Dhawalagiri Zone, Nepal): 49. Antenna; 50. Mesosoma and metasoma; 51. Fore and hind wings.



Figs. 52–58. *Eubroncus orientalis*, male (paratype, University of Malaya Field Station, 16 km E of Gombak, 03°19’30”N, 101°45’12”E, Selangor, Malaysia; photographs courtesy of S. van Noort): 52. Slide; 53. Head and antennae; 54. Fore leg; 55. Mesosoma minus propodeum; 56. Propodeum and metasoma; 57. Fore wing; 58. Hind wing.

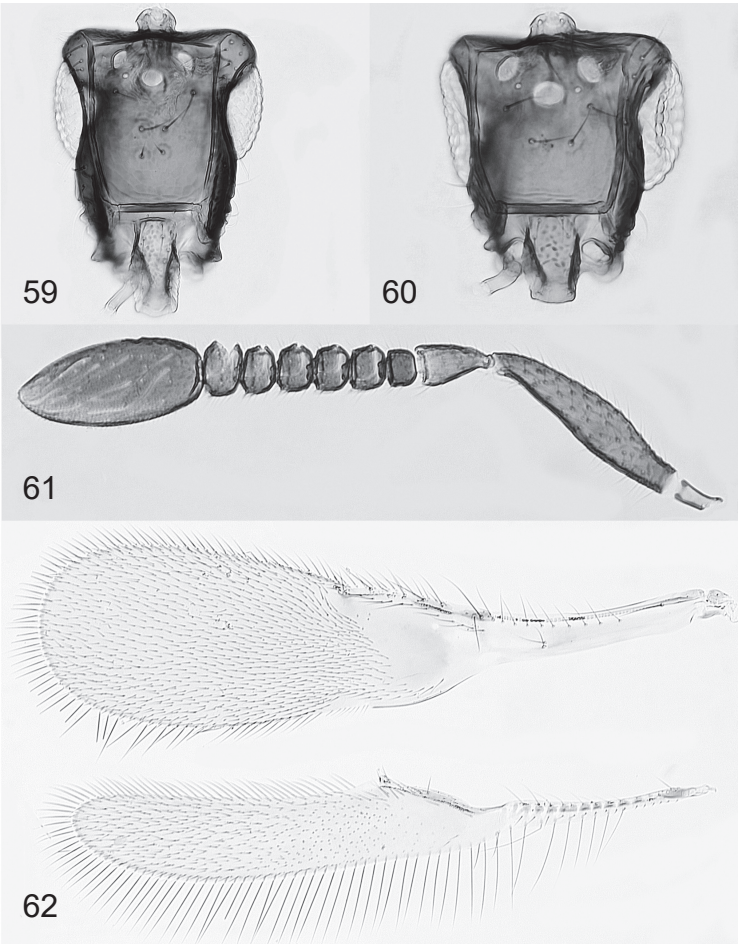
of Malaya Field Station, 16 km E of Gombak, 03°19’30”N, 101°45’12”E, 262 m, Selangor, Malaysia (Triapitsyn & Berezovskiy 2002), who also provided brief descriptive notes on its type specimens and a key to the males of the two species of *Eubroncus* known then. Contrary to the original description of Yoshimoto *et al*. (1972), it has the fore wing normal for the genus (better seen in the dry-mounted holotype), with a group of 3 or 4 setae at apex of venation separating a small bare area just beyond venation at apex of the stigmal vein. The fore wing of the paratype male (Fig. 57), which was also illustrated, as a drawing, by Yoshimoto *et al*. (1972), is just poorly mounted on the slide. The holotype and paratypes of *E. orientalis* had been compared with the following dry-mounted male in CNC which was then slide-mounted: Indonesia, Sulawesi Island, North Sulawesi, Bogani Nani Wartabone

National Park (as “Dumoga-Bone Nat. Park”), Toraut, v.1985, J. S. Noyes. A matching female on a slide in CNC (Indonesia, Sulawesi Island, North Sulawesi, Kotamobagu, Gunung Muajat, 1,760 m, v.1985, J. S. Noyes), also from North Sulawesi, is used to describe the previously unknown female sex of this species below. Of course, it would be preferable to have a matching female from or near the type locality of *E. orientalis* in Malaysia, but unfortunately no such specimen is currently available besides that from Thailand, Phetchaburi, Kaeng Krachan National Park, 12°47’53”N 99°27’11”E, 290 m, 24–26.vi.2008, B. V. Brown (1 female, UCRC), which comes from the same Malay Peninsula (and what it is also important from about the same altitude) as the holotype of this species, and is undoubtedly conspecific with the female from Sulawesi Island. Its ovipositor is 0.7 times as long as mesotibia. Very similar, if not conspecific, specimens are also known to me: Papua New Guinea, Morobe Province, Tekadu: xi.1999–iv.2000, “binatung brigade” (1 male, UCDC); 7°38’S 146°34’E, i.2000, T. S. Sears and “binatung brigade” (1 male, UCRC).

Description (female of *E. orientalis* from Sulawesi Island). Body and antenna (except radicle) brown; mandible, radicle and legs pale light brown. Vertex (Fig. 59) almost smooth (with a very faint, inconspicuous cell-like sculpture visible only under high magnification in slide-mounted specimen). Antenna (Fig. 61) with scape minus radicle with reticulate sculpture, 4.75 times as long as wide; funicular segments short and transverse, F1 the shortest and the narrowest funicular segment and without mps, F2–F6 subequal in length (F6 the widest funicular segment) and each with 2 mps; clava 2.4 times as long as wide, with 7 mps, a little longer than combined length of F2–F6. Mesosoma sculptured as in Fig. 63 (midlobe of mesoscutum and propodeum medially with reticulate sculpture); frenal line on scutellum with a complete row of foveae. Fore wing (Fig. 62) 3.8 times as long as wide; disc strongly infuscate throughout, with a row of long setae behind submarginal vein and with characteristic several discolored marginal setae on posterior margin next to a small bare area behind stigmal vein; longest marginal seta about 0.28 times maximum width of wing. Hind wing (Fig. 62) 7.7 times as long as wide; disc strongly infuscate and with a few somewhat longer setae behind and just beyond apex of venation; longest marginal seta almost equal to maximum width of wing. Coxae with reticulate sculpture. Petiole (Fig. 63) almost as wide as long, reticulate. Gaster (Fig. 63) shorter than mesosoma; first gastral tergum with a few and first gastral sternum with numerous sclerotized ridges; ovipositor 0.74 times as long as mesotibia, exserted slightly beyond gastral apex.

Measurements (mm). Body (of the dry-mounted specimen prior to slide-mounting) 1.025; head: 0.283; mesosoma 0.449; mesoscutum: 0.112; scutellum: 0.121; petiole 0.057; gaster 0.35; ovipositor 0.141. Antenna: scape (excluding radicle) 0.173; pedicel 0.058; F1 0.021; F2 0.027; F3 0.026; F4 0.027; F5 0.026; F6 0.07; clava 0.27. Fore wing 0.904 : 0.24; longest marginal seta 0.067. Hind wing 0.861 : 0.112; longest marginal seta 0.109. Mesotibia: 0.19.

Redescription (male of *E. orientalis* from Sulawesi Island). Body length (of the dry-mounted specimen prior to slide-mounting) 0.76 mm; head length 0.215 mm; length of mesosoma plus metasoma 0.69 mm. Similar to female except for the normal sexually dimorphic features such as antenna and genitalia, and the following. Scape and pedicel pale light brown. Head as in Fig. 60. Antenna (Fig. 64) with scape minus radicle reticulate; flagellomeres subequal in length (apical ones slightly longer), longer than wide, each with several mps. Mesosoma sculptured as in Fig. 65. Fore wing (Fig. 67) 3.3 times as long as wide, without a well-defined small bare area behind stigmal vein next to several discolored marginal setae on posterior margin; longest marginal seta 0.32 times maximum wing width. Hind wing (Fig. 67) 8.4 times as long as wide; disc infuscate

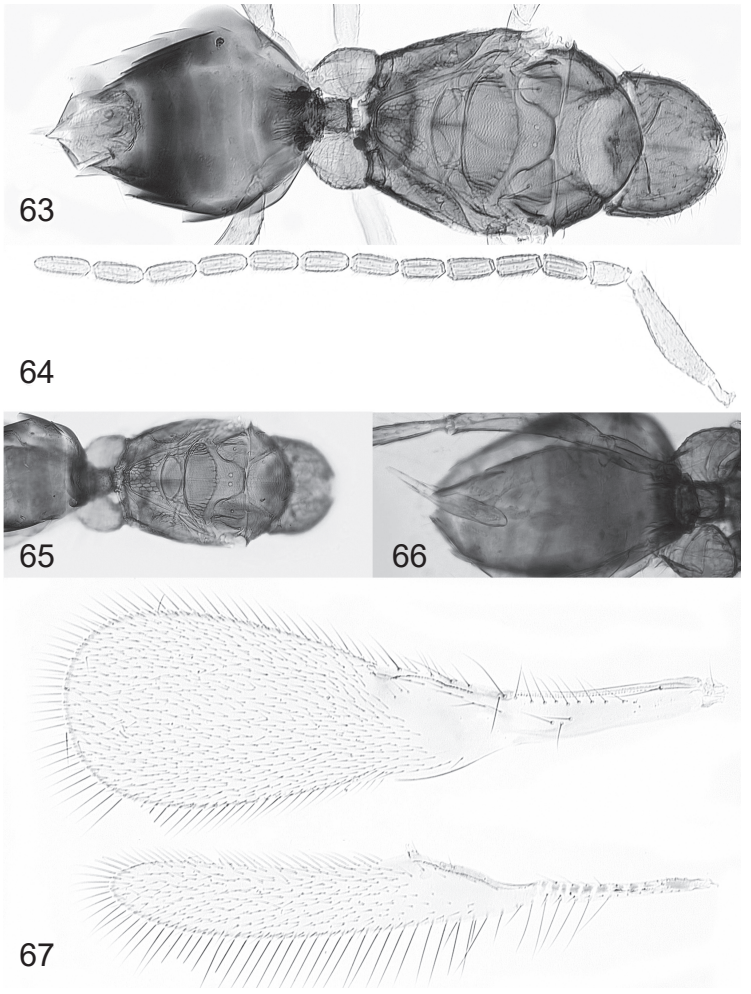


Figs. 59–62. *Eubroncus orientalis* (female—Gunung Muajat, Kotamobagu, North Sulawesi, Sulawesi Island, Indonesia; male—Toraut, Bogani Nani Wartabone National Park, North Sulawesi, Sulawesi Island, Indonesia): 59. Female head in dorsal view; 60. Male head in dorsal view; 61. Female antenna; 62. Female fore and hind wings.

and without a few somewhat longer setae behind and just beyond apex of venation; longest marginal seta 0.9 times maximum width of wing. Genitalia (Fig. 66) length 0.142 mm.

Key to the described species of *Eubroncus* in the world, both sexes

1 Female: flagellum clavate, consisting of 6-segmented funicle and an entire clava (as in Figs. 36, 61, 68) ····· 2
– Male: flagellum filiform, 11-segmented (as in Figs. 40, 49, 53, 64, 75) ····· 7
2(1) Vertex at least partially with strong reticulate (scale-like) sculpture ····· 3
– Vertex smooth or at most with faint, inconspicuous cell-like sculpture better visible under high magnification in slide-mounted specimens ····· 4
3(2) Vertex entirely with strong reticulate (scale-like) sculpture; hind wing disc without a group of long setae behind and just beyond apex of venation ····· ····· *E. vertexus* Jin and Li, 2014
– Vertex only partially with strong reticulate (scale-like) sculpture (more or less smooth around ocelli); hind wing disc with a group of long setae behind and just beyond apex of venation ····· ····· *E. tibetanus* Jin and Li, 2014



Figs. 63–67. *Eubroncus orientalis* (female—Gunung Muajat, Kotamobagu, North Sulawesi, Sulawesi Island, Indonesia; male—Toraut, Bogani Nani Wartabone National Park, North Sulawesi, Sulawesi Island, Indonesia): 63. Female mesosoma and metasoma; 64. Male antenna; 65. Male mesosoma and petiole; 66. Male metasoma; 67. Male fore and hind wings.

4(2) Clava distinctly longer than funicle; midlobe of mesoscutum almost smooth, at most with a faint, inconspicuous cell-like sculpture ····· 5

– Clava at least a little shorter than funicle; midlobe of mesoscutum with a distinct reticulate sculpture ····· 6

5(4) Fore wing with a row of long setae behind submarginal vein (Fig. 46); hind wing disc with a group of very long setae behind and just beyond apex of venation (Fig. 46) ····· *E. indicus* Hayat and Khan, 2009

– Fore wing without a row of long setae behind submarginal vein (as in Fig. 70); hind wing disc without a group of long setae behind and just beyond apex of venation ····· *E. prodigiosus* (Yoshimoto, Kozlov and Trjapitzin, 1972)

6(4) Ovipositor about 0.7 times as long as mesotibia ····· *E. orientalis* Yoshimoto, Kozlov and Trjapitzin, 1972

– Ovipositor about as long as mesotibia ····· *E. scutatus* Manickavasagam and Palanivel, 2015

7(1) Vertex at least partially with strong reticulate (scale-like) sculpture ····· 8

– Vertex smooth or at most with faint, inconspicuous cell-like sculpture better visible under high magnification in slide-mounted specimens ·····9

8(7) Vertex entirely with strong reticulate (scale-like) sculpture ····· *E. vertexus* Jin and Li, 2014

– Vertex only partially with strong reticulate (scale-like) sculpture (more or less smooth around ocelli) (Fig. 73) ····· ····· *E. tibetanus* Jin and Li, 2014

9(7) Midlobe of mesoscutum almost smooth, at most with a faint, inconspicuous cell-like sculpture ····· 10

– Midlobe of mesoscutum with a distinct reticulate sculpture (Figs. 41 and 65) ····· ····· *E. orientalis* Yoshimoto, Kozlov and Trjapitzin, 1972 and *E. scutatus* Manickavasagam and Palanivel, 2015

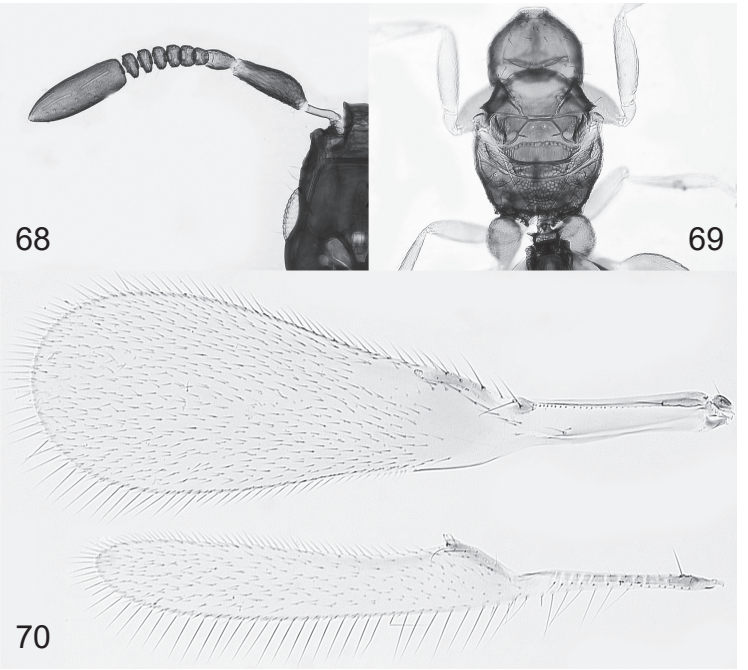
10(9) Propodeum mostly smooth medially (Fig. 50); fore wing with a row of long setae behind submarginal vein (Fig. 51) ····· *E. indicus* Hayat and Khan, 2009

– Propodeum reticulate medially (Fig. 69); fore wing without a row of long setae behind submarginal vein (Fig. 70) ····· ····· *E. prodigiosus* (Yoshimoto, Kozlov and Trjapitzin, 1972)

******Eubroncus* **?*tibetanus* Jin and Li, 2014 (Figs. 71–76)**

Material examined. Taiwan, Taichung, Hsinkangshan (above Chengkung), 350 m, 25–28.iv.1995, A. Smetana (1 male, CNC).

Extralimital material examined. Japan: Honshu Island: Gifu Prefecture, 8 km SE of Osaka, 750 m, 1.viii.1980, A. and Z. Smetana (2 males, CNC). Ibaraki Prefecture, Tsukuba, Matsushiro, 26.vi–4.vii.1989, M. J. Sharkey (2 females, 1 male, CNC). Kyushu Island: Fu-

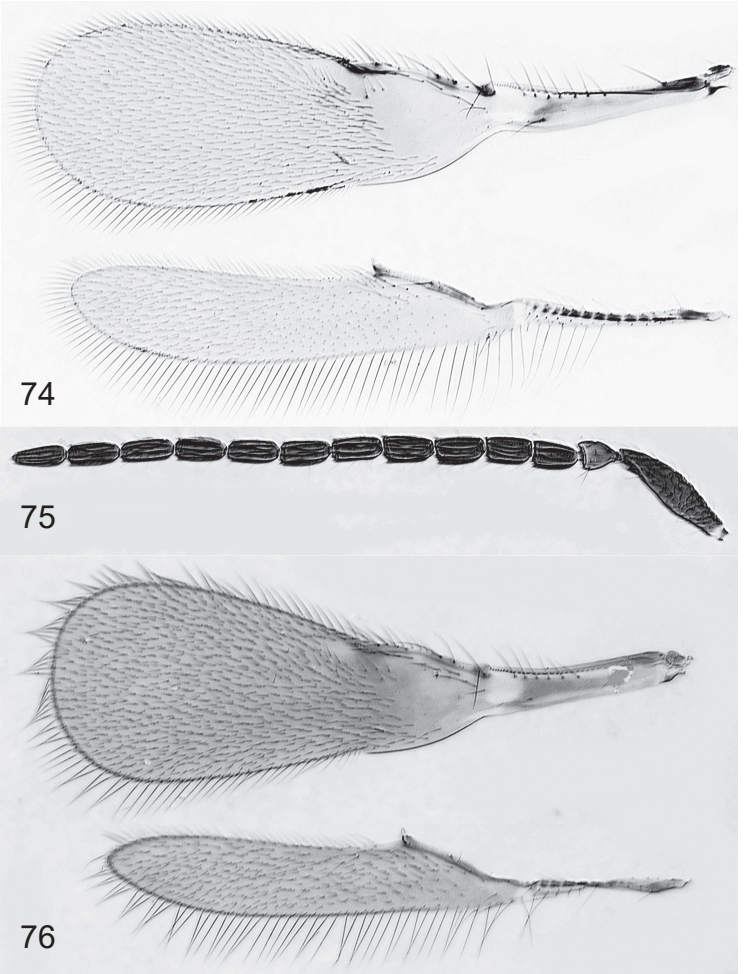


Figs. 68–70. *Eubroncus prodigiosus* (Gornotayozhnoye, Ussuriyskiy rayon, Primorskiy kray, Russia): 68. Female antenna; 69. Male mesosoma and petiole; 70. Male fore and hind wings.

Figs. 71–73. *Eubroncus tibetanus*, male (Mt. Tachibana, Fukuoka Prefecture, Kyushu Island, Japan): 71. Mandibles; 72. Genitalia; 73. Body.

kuoka Prefecture: Mt. Hiko: 4–11.viii.1989, M. J. Sharkey, K. Takeno (1 male, CNC); 11–18. viii.1989, K. Takeno, M. J. Sharkey (1 female, 1 male, CNC). Mt. Tachibana: 6–12.v.1979, K. Yamagishi (5 females, 1 male, CNC); 13–19. v.1979, K. Yamagishi (1 male, CNC); 10–16. vi.1979, K. Yamagishi (1 female, 1 male, CNC); 7–13.vii.1979, K. Yamagishi (1 female, CNC); 15–21.vii.1979, K. Yamagishi (1 female, CNC); 12.viii.1980, C. M. Yoshimoto (4 females, 4 males, CNC). Miyazaki Prefecture, Aya, Teruha Bridge, 32°01'N 131°11'E, 200 m, 20–22.ix.1996, L. Masner (1 female, CNC). Thailand, Chiang Mai, Doi Inthanon National Park, near park headquarters, 18.54°N 98.52°E, 1,300 m, 30.vi.2006, Y. Areeluck (1 male, UCRC). Two females from Mt. Tachibana, Japan were misidentified by C. M. Yoshimoto as *E. prodigiosus*. These are new country records of *E. tibetanus*; also a very similar, but probably an undescribed species of *Eubroncus* is known to me from the mountains of Luzon Island, the Phillipines [3 females in the California Academy of Sciences, San Francisco, California, USA (CAS)].

Comments. A brief description of the previously unknown male of *E. tibetanus* is as follows (specimens from Japan). Body length 0.76–1.15 mm (dry-mounted specimens). Similar to female, as described by Jin & Li (2014), except for the normal sexually dimorphic features such as antenna and genitalia, and the following. Body dark brown; scape and pedicel brown, flagellum dark brown; mandible and legs light brown to brown except metacoxa dark brown. Vertex (Fig. 73) mostly reticulate except almost smooth around ocelli; mandibles as in Fig. 71. Antenna (Fig. 75) with scape reticulate, 3.7 times as long as wide; flagellomeres more or less subequal in length (the apical ones slightly longer), longer than wide, each with several mps. Mesosoma sculptured as in Fig. 73. Fore wing (Fig. 76) 3.2 times as long as wide and its disc with a row of long setae behind submarginal vein; longest marginal seta about 0.33 times maximum wing width. Hind wing (Fig. 76) 7.6 times as long as wide; longest marginal seta about 0.8 times maximum width of wing; disc with much shorter setae behind and just beyond the apex of ve-



Figs. 74–76. *Eubroncus tibetanus* (Mt. Tachibana, Fukuoka Prefecture, Kyushu Island, Japan): 74. Female fore and hind wings; 75. Male antenna; 76. Male fore and hind wings.

nation than in female (Fig. 74). Genitalia (Fig. 72) length 0.136 mm.

***Eubroncus* sp.**

Material examined. Taiwan, New Taipei City, Wulai District, Fushan, 400–600 m, 28.xi.1997, B. J. Sinclair (1 male, CNC).

Comments. This interesting card-mounted specimen seems to represent an undescribed species as it has a unique combination of a strongly reticulate vertex and the propodeum being mostly smooth medially.

***Gonatocerus aegyptiacus* Soyka, 1950**

Material examined. Taiwan: Chiayi Co., Chiayi, 18.vi.1972, K. S. Lin (1 female, TARI). Pingtung Co., Pingtung, 13.iv.1976, C. C. Wu, from eggs of *Nephotettix* sp. on rice (5 females, 1 male, TARI). Taipei City: viii.1963, K. S. Lin (1 female, TARI); 4.xi.1974, K. S. Lin (5 females, TARI).

Host in Taiwan. *Nephotettix* sp. (Cicadellidae).

Extralimital material examined. Japan, Honshu Island, Shimane Prefecture, "Yatsuka-gun, Shimane-cho," 16.ix.1985, K. Miura, from eggs of *N. cincticeps* in rice field (4 females, 1 male, CNC).

***Gonatocerus fuscicornis* Walker, 1846**

Material examined. Taiwan, Taipei City, 4.xi.1974, K. S. Lin (1 female, TARI).

***Gonatocerus longicornis* Nees ab Esenbeck, 1834**

Material examined. Taiwan: Lu Kang, Chang Hwo, 12.viii.1952, K. S. Lin (2 females, TARI). Pingtung Co., Pingtung, 26.vi.1970, K. S. Lin, sweeping in rice field (10 females, 2 males, TARI). Taipei City: 2.viii.1950, K. S. Lin (1 female, TARI); 6–15.xii.1957, K. S. Lin (1 female, TARI); Hsintien, 31.iii.1963, K. S. Lin (1 female, TARI); 26–31.vii.1963, K. S. Lin (1 female, TARI); viii.1963, K. S. Lin (5 females, TARI); 2–7.ix.1963, K. S. Lin (3 females, TARI); 15–30.ix.1963, K. S. Lin (5 females, TARI); 1–15.x.1963, K. S. Lin (5 females, TARI); 16–31.x.1963, K. S. Lin (1 female, TARI); 4–19.xi.1963, K. S. Lin (5 females, TARI); 20–30.xi.1963, K. S. Lin (1 female, TARI); 20–30.xii.1963, K. S. Lin (1 female, TARI); 1–19.ii.1964, K. S. Lin (1 female, TARI); 3–10.xii.1964, K. S. Lin (1 female, TARI); iii.1965, K. S. Lin (1 female, TARI); vii.1967, K. S. Lin (1 female, TARI); vi.1969, K. S. Lin (1 female, TARI); vii.1969, K. S. Lin (1 female, TARI); 1969, K. S. Lin (1 female, TARI); x.1972, K. S. Lin (1 female, TARI); ix.1974, K. S. Lin (1 female, TARI); 8.x.1974, K. S. Lin (2 females, TARI); 18.xi.1974, K. S. Lin (1 female, TARI). Wulai (20 km S of Taipei City), 20.iii.1963, K. S. Lin (1 female, TARI).

Extralimital material examined. France, Côte-d'Or, Esbarres, 13.vii.1964, J. Barbier (1 female, MNHN). Japan, Honshu Island, Yamaguchi Prefecture, Yamaguchi City: 22.vii.1969, K. S. Lin, in rice field (1 female, TARI); Yoshida, K. Miura, from egg of *Cicadella viridis* (Linnaeus, 1758) on *Lolium multiflorum*: 28.viii.1984 (1 female, CNC); 4.ix.1984 (8 females, 5 males, CNC).

***Gonatocerus* sp(p).**

Lymaenon sp.: Lin 1974: 93–96 [Pingtung, Taipei; key, illustration of a fore wing (consistent with that of *G. aegyptiacus*)], 98–99 (descriptive notes and history of previous records and misidentifications in Taiwan).

Gonatocerus sp.: Chu and Hirashima, 1981: 35–36; Miura *et al*., 1981: 49–50 ("Linnei, Kuantyling, Lungtien, Hsinshih, Kueijen, Chiasien, Matou").

Hosts in Taiwan. *N. lugens* (Stål, 1854) (Delphacidae) (Lin 1974; Chu & Hirashima 1981), as well as *N. cincticeps* (Uhler, 1896) (Lin 1974; Chu & Hirashima 1981) and *Nephotettix* spp. (Miura *et al*. 1981) (Cicadellidae).

Comments. *Lymaenon* sp. of Lin (1974) and *Gonatocerus* sp. of Miura *et al*. (1981) very well could be a mixture of two very similar species of the genus *Gonatocerus* Nees ab Esenbeck, 1834, *G. cincticipitis* Sahad, 1982 and *G. aegyptiacus* Soyka, 1950, both of which are known as sympatric egg parasitoids of the rice leafhoppers and planthoppers in Japan and Republic of Korea (Triapitsyn 2013b). Indeed, as shown above, some of Dr. Kwei-Shui Lin's specimens from Taiwan belong to *G. aegyptiacus*. Differences between them are quite minor (presence or absence of a mps on F5 of the female antenna, often inconsistent between the antennae in the same specimen, and also chaetotaxy on the base of the fore wing (Sahad & Hirashima 1984), which are likely unreliable characters), so *G. cincticipitis* could very well be a synonym of *G. aegyptiacus*. I am reluctant, however, to propose such a synonymy here until a thorough combined morphometric and molecular study is conducted with a statistically sufficient number of fresh specimens of these two nominal species.

The following extralimital specimen of *G. cincticipitis* has been examined: Japan, Honshu Island, Yamaguchi Prefecture, Yamaguchi, 22.vii.1969, K. S. Lin, rice field (1 female, TARI).

***Himopolynema berezovskiyi* Triapitsyn, 2015**

H. Berezovskiyi Triapitsyn, 2015a: 82–84 (Taichung).

***Himopolynema heratyi* Triapitsyn, 2015**

H. heratyi Triapitsyn 2015a: 84–86 (Nantou Co.).

***Himopolynema hishimonus* Taguchi, 1977**

H. hishimonus Taguchi, 1977a: 137–139 (Taipei);.

H. hishimonus Taguchi: Triapitsyn, 2015a: 88–89 (Keelung Co., Pingtung Co., Taichung, Taipei).

Material examined. Taiwan, Taipei City, vii.1967, K. S. Lin (1 female, TARI).

***Himopolynema kslini* Triapitsyn, 2015**

H. kslini Triapitsyn, 2015a: 92–96 (Pingtung Co., Taichung, Taipei).

***Himopolynema parviscutum* Taguchi, 1977**

H. parviscutum Taguchi, 1977a: 140–141 ["Ronshung Spa" (probably the name of a resort hotel which is no longer around), "Chipon Spa" (the latter in Taitung Co.)]; .

H. parviscutum Taguchi: Triapitsyn, 2015a: 96–99 (Pingtung Co., Taipei, Taitung Co.).

***Himopolynema taiwanum* Taguchi, 1977**

H. taiwanum Taguchi 1977a: 142 (Pingtung Co.); .

H. taiwanum Taguchi: Triapitsyn, 2015a: 99–102 (Keelung Co., Taipei).

***Himopolynema tarii* Triapitsyn, 2015**

H. tarii Triapitsyn 2015a: 103–105 (Kaohsiung Co.).

***Himopolynema* sp.**

Himopolynema sp.: Triapitsyn 2015a: 105–109 (Chiayi Co.).

****Litus cynipseus* Haliday, 1833**

Material examined. Taiwan, Nantou Co., Lienhuatse, 750 m, 20.ii–18.iii.1991, C. K. Starr, C. S. Lin (1 female, CNC).

Litus camptopterus Novicky, 1953

L. camptopterus Novicky: Triapitsyn and Berezovskiy, 2004b: 10 (Nantou Co.).

****Lymaenon aureus* (Girault, 1911)**

Material examined. Taiwan: Pingtung Co., Kenting National Park, Hengchun, Kueitzuchiao (as "Kuraru, Heng Chung"), 22–29. v.1965, K. S. Lin (5 females, TARI). Taichung, Wufeng, TARI, 24°01'37.1"N 120°41'45.7"E, 83 m, 4–7.x.2016, S. V. Triapitsyn (2 females, 12 males, UCRC). Taipei City: vii.1967, K. S. Lin (4 females, TARI); viii.1968, K. S. Lin (1 female, TARI).

****Lymaenon bicoloriventris* (Zeya, 1995)**

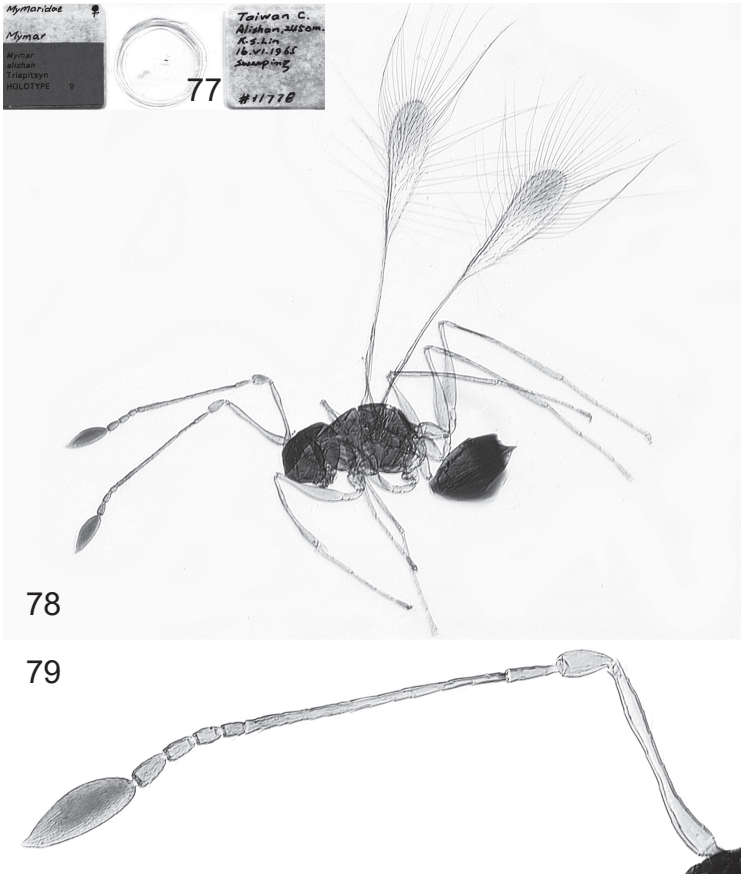
Material examined. Taiwan: Taipei City: vii.1967, K. S. Lin (4 females, TARI); viii.1968, K. S. Lin (1 female, TARI); Hsintien, ix.1968, K. S. Lin (1 female, TARI). Tsaoshan (20 km N of Taipei City), viii.1968, K. S. Lin (1 female, TARI).

****Lymaenon litoralis* (Haliday, 1833)**

Material examined. Taiwan: Chiayi Co., Chiayi, 26.ix.1957, K. S. Lin (1 female, TARI). Taichung, Wufeng, TARI, 24°01'52.4"N 120°41'34.2"E, 76 m, 6–11.x.2016, S. V. Triapitsyn, H.-T. Shih, wild rice field (1 female, TARI). Taipei City: 21–30.vi.1963, K. S. Lin (1 female, TARI); vi.1963, K. S. Lin (1 female, TARI); vii.1967, K. S. Lin (1 female, TARI); viii.1967, K. S. Lin (1 female, TARI); Hsintien, x.1968, K. S. Lin (1 female, TARI); 2.x.1975, K. S. Lin (1 female, TARI). Shong Keng (20 km S of Taipei City), ix.1972, K. S. Lin (1 female, TARI).

****Mymar alishan* Triapitsyn, sp. nov. (Figs. 77–84)**

Type material. Holotype female (TARI) on slide (Fig. 77), labeled: 1. "Taiwan C. Alishan, 2,450 m. K. S. Lin 16.VI.1965 sweeping #11778"; 2. "Mymaridae ♀ *Mymar*"; 3. [magenta] "*Mymar alishan* Triapitsyn HOLOTYPE ♀." The type locality is in Chiayi Co. The holotype (Fig. 78) is in fair condition, complete, mounted laterally. Paratypes: 1 female and 1



Figs. 77–79. *Mymar alishan*, female (holotype): 77. Slide; 78. Habitus; 79. Antenna.

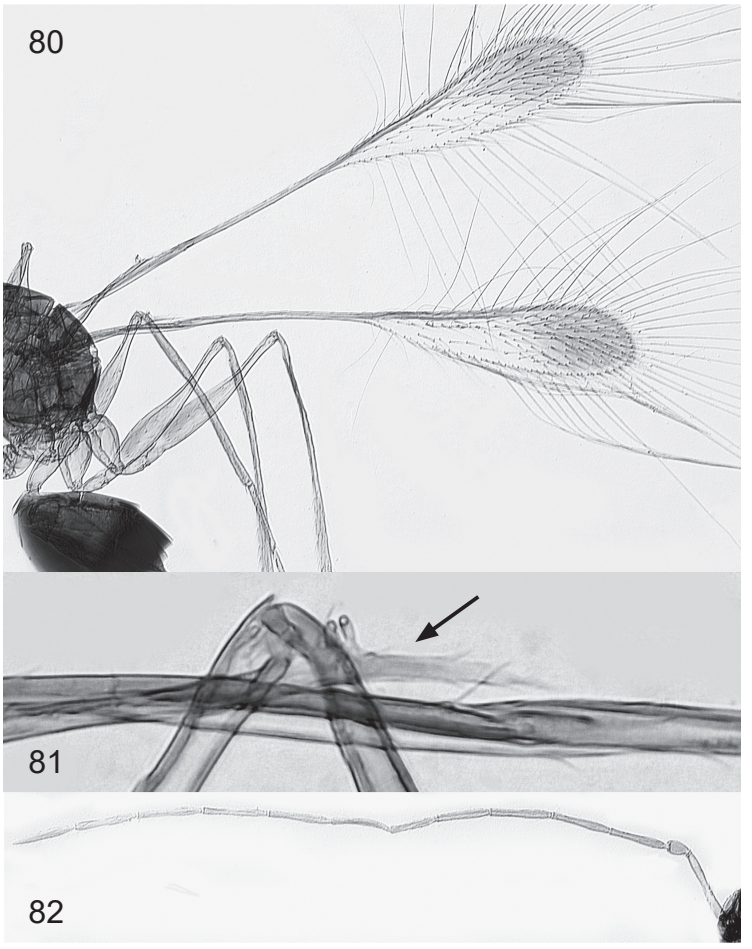
male on slides, same data as the holotype except for K.-S. Lin's slide numbers #11777 and # 11776, respectively.

Description. Female (holotype, Fig. 78). Body mostly dark brown except mesosoma brown and petiole light brown, scape and pedicel brown and flagellum dark brown, legs mostly light brown.

Antenna (Fig. 79) with scape minus short radicle 8.0 times as long as wide, with a constriction in the middle; pedicel longer than F1; F2 the longest funicular segment, slightly longer than combined length of F3–F6 plus clava, and also longer than scape (ratio of length of F2 to clava length 2.05 and ratio of F2 length to combined length of F3–F6 2.1); remaining funicular segments short (F3 the shortest, F6 the longest and the widest); all funicular segments without mps; clava with 7 subapical mps, 2.8 times as long as wide and notched at apex, about as long as combined length of F3–F6.

Wings (Fig. 80). Fore wing disc almost 0.5 times total length of wing, length:width ratio of disc 3.8, disc with about 46 very long marginal setae; venation reaching level of 6th long marginal seta on anterior margin; disc entirely setose (more densely do apically), apical dark area a little less than 0.5 times length of disc. Hind wing 0.23 times length of fore wing, with a narrow, distinct extension (stub) beyond hamuli (Fig. 81) but without a membrane or long setae on stub apex (only with a few very short setae along stub length); ratio of post hamuli stub length to entire hind wing length 0.23.

Metasoma with petiole smooth, about 1.5



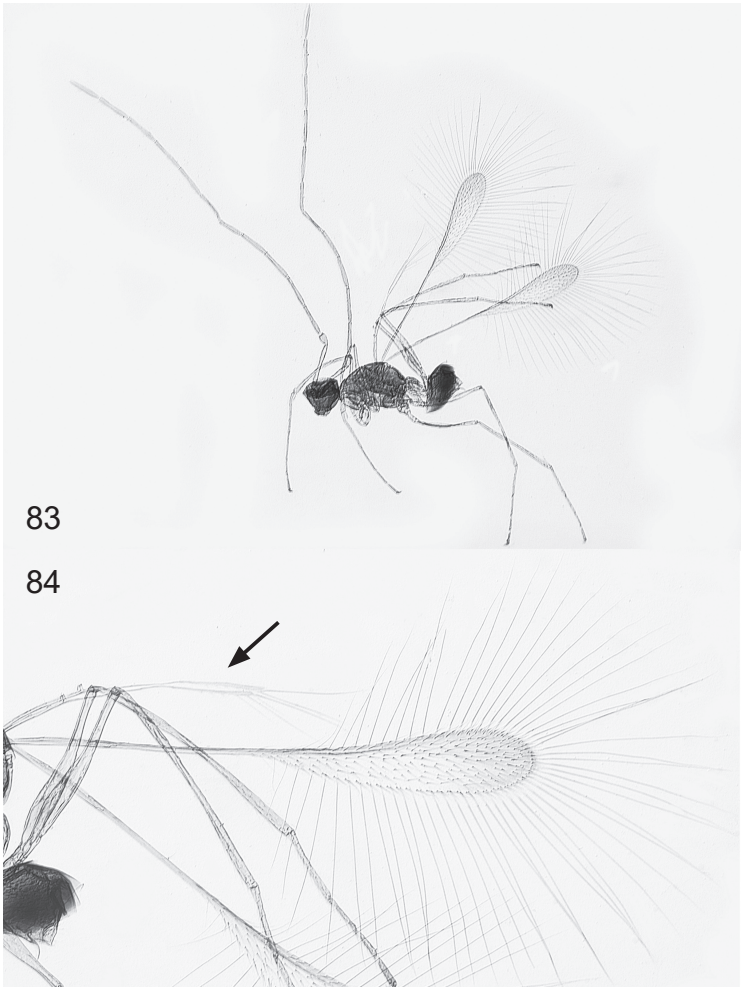
Figs. 80–82. *Mymar alishan*: 80. Female wings (holotype); 81. Female hind wing (holotype; arrow points to post hamuli stub); 82. Male antenna (paratype).

times as long as metacoxa; gaster a little shorter than mesosoma; ovipositor occupies about 0.9 times length of gaster, not exserted beyond gastral apex, 0.65 times length of metatibia.

Measurements (mm) of the holotype. Body (as positioned on the slide) 0.821; mesosoma 0.357; petiole 0.166; gaster 0.338; ovipositor 0.301. Antenna: scape (minus radicle) 0.254; pedicel 0.066; F1 0.052; F2 0.318; F3 0.027; F4 0.03; F5 0.035; F6 0.044; clava 0.155. Fore wing total length 1.088, disc length : width 0.523 : 0.136; longest marginal seta 0.492. Hind wing total length 0.246; post hamuli stub length 0.057.

Variation (paratype). Body length (as positioned on the slide) 0.843 mm. Antenna with scape minus radicle 8.5 times as long as wide; pedicel about as long as F1; F2 a little shorter than combined length of F3–F6 plus clava and also a little longer than scape (ratio of length of F2 to clava length 1.8 and ratio of F2 length to combined length of F3–F6 1.7); clava 3.3 times as long as wide. Fore wing disc 4.1 times as long as wide and with about 48 very long marginal setae. Ovipositor 0.7 times length of metatibia.

Male (paratype, Fig. 83). Body length 0.843 mm. Similar to female except for the normal sexually dimorphic features such as antenna and genitalia, and the following. Antenna (Fig.



Figs. 83–84. *Mymar alishan*, male (paratype): 83. Habitus; 84. Wings (arrow points to hind wing).

82) with scape (minus short radicle) 8.0 times as long as wide and longer than any flagellar segment, flagellar segments very long, much longer than wide. Protarsus 1.3 times as long as metatarsus. Fore wing (Fig. 84) with disc 4.5 times as long as wide, densely setose and with about 57 long marginal setae; apical dark area notably shorter than in the female. Hind wing (Fig. 84) with disc reduced to a narrow, short membrane and with 3 long marginal setae.

Diagnosis. *M. alishan* belongs to the informal *pulchellum* species group of *Mymar* Curtis, 1829, as defined by Donev & Triapitsyn (2010), and is very distinctive as it has the entire disc of the fore wing setose in both sexes, particularly densely so on the apical dark area (Figs. 80 and 84). Like in *Mymar maritimum* Triapitsyn and Berezovskiy, 2001 and *Mymar venustum* Girault, 1911 (Donev & Triapitsyn 2010), its hind wing is abbreviated to a short stub beyond the hamuli in the female (Fig. 81) but has a reduced membrane with several long marginal setae in the male (Fig. 84). In Triapitsyn & Berezovskiy (2001), female of *M. alishan* keys to couplet 4 together with *M. maritimum* and *Mymar pulchellum* Curtis, 1832 while its male keys to couplet 12 together with *Mymar ermak* Triapitsyn and Berezovskiy, 2001 and *Mymar cincinnati* Girault, 1917, which is now a synonym of *M.*

venustum (Donev & Triapitsyn 2010). Female of *M. venustum* is very similar to that of *M. pulchellum* (because intraspecific variability in the length of antennal segments in the species of *Mymar* can often be quite significant, particularly of F2, their proportions should be used with caution), so for the time being only males of these two species can be separated with confidence in the Nearctic region where both of them occur. The record of *M. venustum* (females only) from Andaman and Nicobar Islands, India, by Amer *et al*. (2017) needs confirmation because it is highly unlikely that this Nearctic species would occur there.

An updated key to the described species of *Mymar* in the world follows, as it is needed after two new species were added to the knowledge of the genus since the key by Triapitsyn & Berezovskiy (2001) was published (Hayat *et al*. 2008; Donev & Triapitsyn 2010), and other changes in its taxonomy were made by Donev & Triapitsyn (2010). The key does not include the four species recently described from India in Amer *et al*. (2017) based on one sex only (females) because their type specimens have not been examined and there is no information about their males, which are almost equally important for accurate recognition of *Mymar* species. Based on their original descriptions and illustrations, none of them is conspecific with *M. alishan* as all have a distinct glabrous area on the fore wing disc (Amer *et al*. 2017).

Triapitsyn & Berezovskiy (2001) incorrectly identified three females from Chiang Mai, Thailand as *Mymar schwanni* Girault, 1912; in fact, these and other specimens from several countries in the Oriental region including India (Manickavasagam *et al*. 2011) belong to a species from the *pulchellum* group whose identity remains to be figured out, although they are definitely more similar to *M. pulchellum* in having the hind wing with a distinct, albeit short, stub beyond the hamuli (Huber & Islam 2017, p. 88, Fig. 25). They are almost definitely conspecific either with specimens from Bangladesh and India which were identified, respectively, by Huber & Islam (2017) and Amer *et al*. (2017) as *M. pulchellum*, or with one of the four new species of *Mymar* described in Amer *et al*. (2017). In specimens of *M. schwanni* of both sexes from Australia, the hind wing either lacks such a stub beyond the hamuli (Fig. 87) or it is extremely short and indistinct (Fig. 88).

Key to the world species of *Mymar* (excluding four species from India described in Amer *et al*. (2017); male of *Mymar roopum* Hayat and Khan, 2008 is unknown)

1 Female: flagellum clavate, consisting of 6-segmented funicle and an entire clava (as in Figs 79, 92) ····· 2

– Male: flagellum filiform, 11-segmented (as in Fig. 82) ····· 12

2(1) Hind wing either abbreviated to a short stub just beyond the hamuli (as in Figs. 81, 89, 93) or such stub absent (Fig. 87) or indistinct (Fig. 88) (*pulchellum* species group) ·····3

– Hind wing either filamentous or with a narrow expansion of membrane beyond the hamuli ····· 8

3(2) Apical dark area on fore wing disc usually covering more than half of its length; hind wing without a distinct stub beyond the hamuli (Figs. 87–88) ····· ····· *M. schwanni* Girault, 1912

– Apical dark area on fore wing disc covering at most half of its length; hind wing with a distinct, albeit short, stub beyond the hamuli (its length varies) ····· ····· 4

4(3) Fore wing disc entirely setose (Fig. 80) ·····*M. alishan* Triapitsyn, sp. nov.

– Fore wing disc only partially setose ···· 5

5(3) Ratio of post hamuli stub length to length of entire hind wing at least 0.3:1 ·····*Mymar ramym* Donev and Triapitsyn, 2010

– Ratio of post hamuli stub length to length of entire hind wing at most 0.2:1 ····· 6

6(5) Apical dark area on fore wing disc cov-

ering almost half of its length (Fig. 89); fore wing disc at most 3.5 times as long as wide; pedicel slightly shorter than F1 ····· *M. maritimum* Triapitsyn and Berezovskiy, 2001

– Apical dark area on fore wing disc covering notably less than half of its length; fore wing disc at least 4.1 times as long as wide; pedicel either slightly longer than or about as long as F1 ····· 7

7(6) Scape usually notably shorter than F2 ····· *M. pulchellum* Curtis, 1832

– Scape at most slightly shorter than F2 (Fig. 92) ····· *M. venustum* Girault, 1911

8(2) Hind wing filamentous beyond the hamuli, without apparent membrane and with 1 long apical seta ····· 9

– Hind wing with a narrow, but distinct, expansion of membrane beyond the hamuli and usually with several (but sometimes with only 1) long marginal setae ····· 10

9(8) F3 less than 3 times as long as wide, clava length at least 0.85 times combined length of F3–F6; only anterior half or so of apical dark area on fore wing disc setose ····· *Mymar taprobanicum* Ward, 1875

– F3 at least 3 times as long as wide, clava length at most 0.75 times combined length of F3–F6; most of anterior apical dark area on fore wing disc setose ····· *M. roopum* Hayat and Khan, 2008

10(8) Fore wing disc entirely hyaline, without a dark apical area ····· *Mymar africanum* Annecke, 1961

– Fore wing disc with a distinct dark apical area ····· 11

11(10) Most of apical dark area on fore wing disc setose ····· *M. ermak* Triapitsyn and Berezovskiy, 2001

– Only anterior half of apical dark area on fore wing disc setose ····· *Mymar regale* Enock, 1912

12(1) Hind wing either abbreviated to a short stub just beyond the hamuli or such stub absent or indistinct ····· 13

– Hind wing either filamentous or with a narrow expansion of membrane beyond the hamuli ····· 15

13(12) Ratio of post hamuli stub length to length of entire hind wing at least about 0.3 : 1 ····· *M. ramym* Donev and Triapitsyn, 2010

– Post hamuli stub either absent or, if present, ratio of its length to length of entire hind wing at most 0.2 : 1 ····· 14

14(13) Hind wing without a distinct stub beyond the hamuli ····· *M. schwanni* Girault, 1912

– Hind wing with a distinct, albeit short, stub beyond the hamuli ····· *M. pulchellum* Curtis, 1832

15(12) Hind wing filamentous beyond the hamuli, without apparent membrane and almost always with 1 long apical seta (very rarely with two apical setae) ····· *M. taprobanicum* Ward, 1875

– Hind wing with a narrow, but distinct, expansion of membrane beyond the hamuli and with several long marginal setae (as in Figs. 84–86, 90–91) ····· 16

16(15) Fore wing disc hyaline, without a dark apical area ····· *M. africanum* Annecke, 1961

– Fore wing disc with a distinct dark apical area ····· 17

17(16) Fore wing disc entirely setose (Fig. 84) ····· *M. alishan* Triapitsyn, sp. nov.

– Fore wing disc not entirely setose ····18

18(17) Apical dark area on fore wing disc entirely setose (Fig. 86) ····· *M. ermak* Triapitsyn and Berezovskiy, 2001

– Apical dark area on fore wing disc not entirely setose, with at least a small but distinct bare area ····· 19

19(18) Fore wing disc less elongate, about 3.6 times as long as wide (Fig. 90) ····· *M. maritimum* Triapitsyn and Berezovs-

kiy, 2001

– Fore wing disc notably more elongate, about 4.4 times as long as wide ····· 20

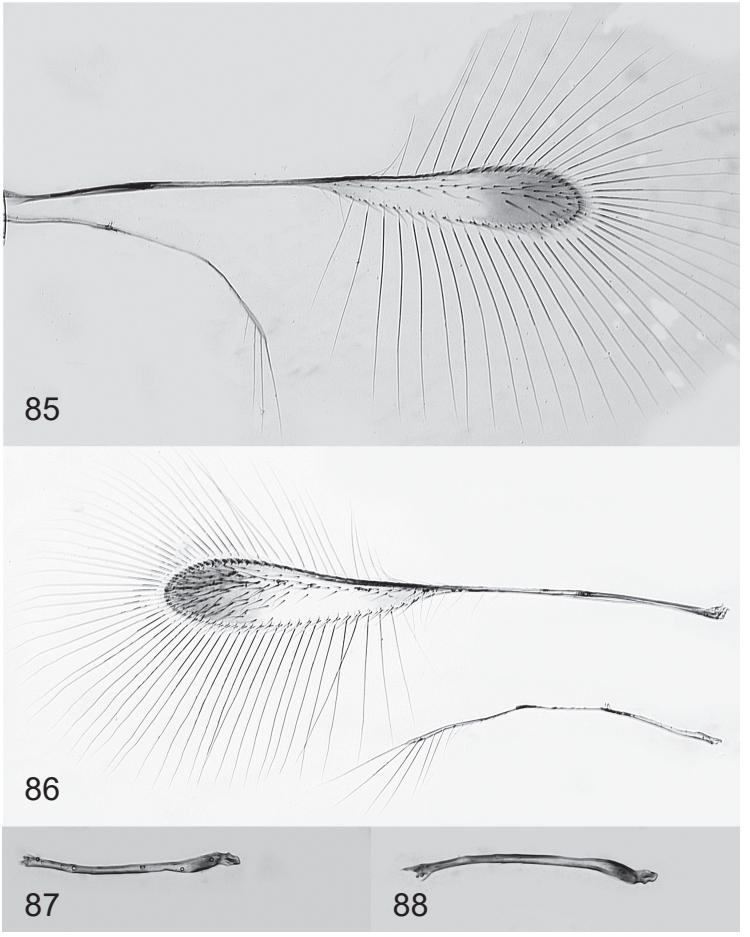
20(19) Apical dark area on fore wing disc with setae only in its anterior half (Fig. 91) ·····*M. regale* Enock, 1912

– Apical dark area on fore wing disc with a few setae also in its posterior half (Fig. 85) ·····*M. venustum* Girault, 1911

Etymology. The species is named after its type locality and is a noun in apposition.

Hosts. Unknown.

Comments. I have examined the following specimens of *M. schwanni*: Australia: Australian Capital Territory: Canberra, Black Mt., CSIRO, 35°16'S 149°06'E, G. A. P. Gibson: 1–7.ii.1999 (1 female, 1 male, UCRC); 15–21.iii.1999 (1 male, UCRC); 26.iv–2.v.1999 (1 female, 4 males, UCRC); 10–16.v.1999 (1 female, UCRC). Canberra Nature Park, Black Mt., Aranda Bushland, 35°15.89'S 149°05.08'E, 27–28.xi.2002, J. George, J. Munro, A. Owen (1 female, UCRC). New South Wales, Kosciuszko National Park, 35°54.9'S 148°37.3'E, 26–28.xi.2002, J. George, J. Munro, A. Owen, J. D. Pinto, G. Platner (2 males, UCRC). Queensland: Brisbane Forest Park: 27°20.28'S 152°46.12'E,



Figs. 85–88. *Mymar* spp.: 85. *Mymar venustum*, male fore and hind wings (holotype of *Mymar cincinnati*); 86. *Mymar ermak*, male fore and hind wings (paratype, Gornotayozhnoye, Ussuriyskiy rayon, Primorskiy kray, Russia); 87. *Mymar schwanni*, female hind wing (Mundubbera, Queensland, Australia); 88. *M. schwanni*, female hind wing (CSIRO, Black Mt., Canberra, Australian Capital Territory, Australia).

Figs. 89–90. *Mymar maritimum* (Gornotayozhnoye, Ussuriyskiy rayon, Primorskiy kray, Russia): 89. Female fore and hind wings (paratype); 90. Male fore and hind wings.

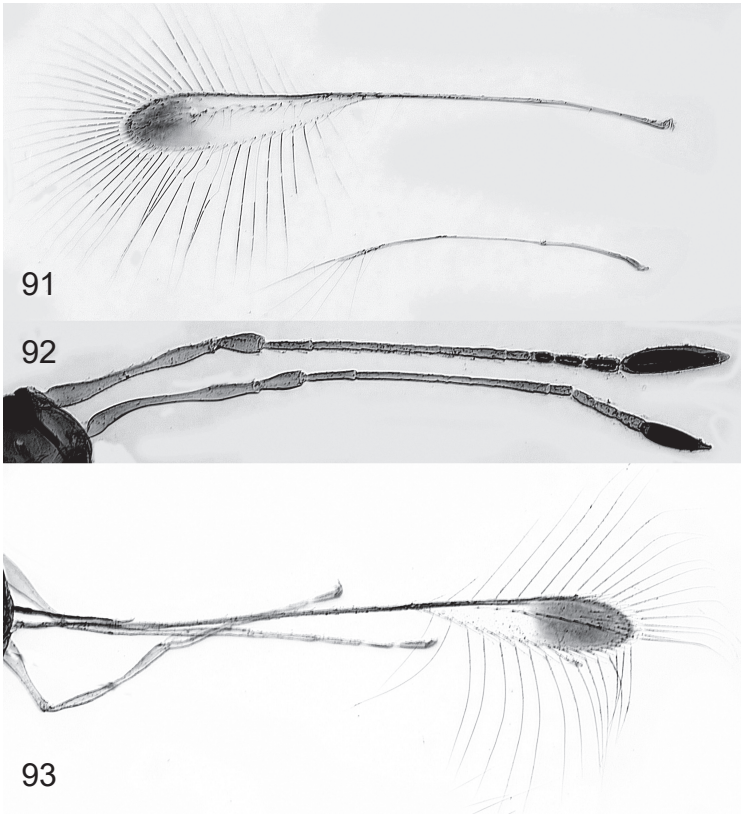
4–13.xii.2002, J. George, J. Munro, A. Owen (1 male, UCRC); 27°23.57'S 152°54.68'E, 5–6.xii.2002, J. George, J. Munro, A. Owen (1 male, UCRC); 27°24'04"S 152°49'48"E, 30.xii.1997, N. Power (1 female, CNC); 27°24.05'S 152°48.11'E, 4–13.xii.2002, J. George, J. Munro, A. Owen (1 female, UCRC). 9 km N of Crow's Nest, 14.iv.1990, J. M. Heraty (1 male, UCRC). Mundubbera, vi.2000, C. Freebairn (1 female, UCRC). South Australia, Picadilly Valley, 15.x.1992, L. S. and R. B. Kimsey (1 female, UCDC). Western Australia, Carters Rd. near Margaret R., 33°56.12'S 115°03.94'E, 15–16.xi.2002, J. George, D. Hawks, J. Munro, A. Owen (1 male, UCRC).

The following specimens of *M. venustum* have been examined: Canada, Ontario: Constance Bay, G. A. P. Gibson: 6–13.vii.1973 (1 male, CNC); 20.vii.1973 (1 male, CNC); 22–28.ix.1973 (1 female, CNC). Innisville, 22.viii.1963 (1 female, CNC). USA, New York, Seneca Co., 4.5 mi. SW of Lodi, Silver Thread Vineyard, 42°33'45.5"N 76°52'27.2"W, 202 m, 30.vii–14.viii.2010, G. Loeb, S.V. Triapitsyn (1 female, UCRC). This species is newly recorded from Canada.

Also, examined was the following specimen which mostly fits the original description of *M. roopum* except length of the clava is about 0.6 times the combined length of F3–F6: Philippines, Luzon Island, Quezon Prov., Mt. Benahaw de Lucban, 14°05.859'N 121°31.071'E, 747 m, 14–22.v.2011, H. Wood, M. Yngente (1 female, CAS).

******Mymar maritimum* **Triapitsyn and Berezovskiy, 2001**

Material examined. Taiwan, Taipei City,



Figs. 91–93. *Mymar* spp.: 91. *Mymar regale*, male fore and hind wings (Corphalie, Antheit, Wanze, Liège, Belgium); 92. *Mymar venustum*, female antennae (holotype); 93. *M. venustum*, female fore and hind wings (holotype).

vii.1967, K. S. Lin (1 female, TARI).

***Mymar taprobanicum* Ward, 1875**

Mymar ?*indica* Mani, 1942: Lin, 1974: 95–96 [key, habitus illustration of a female (consistent with that of *M. taprobanicum*)], 99–100 (descriptive notes based on material from Taiwan).

M. taprobanicum Ward: Taguchi, 1974: 22 (Taipei).

Material examined. Taiwan: Chiayi Co., Chiayi: 11–13.xi.1956, K. S. Lin (4 males, TARI); 26.ix.1957, K. S. Lin (2 males, TARI); 18.vi.1972, K. S. Lin (1 female, TARI). Pingtung Co., Kenting National Park, Hengchun, Kueitzuchiao (as "Kuraru, Heng Chung"), 22–29.v.1965, K. S. Lin (2 males, TARI). Taichung: Taichung District Agricultural Improvement Station, 16.vii.1976, K. S. Lin, in rice field (1 male, TARI). Wufeng, TARI: 24°01'37.1"N 120°41'45.7"E, 83 m, 4–7.x.2016, S. V. Triapitsyn (1 male, UCRC); 24°01'52.4"N 120°41'34.2"E, 76 m, 6–11. x.2016, S. V. Triapitsyn, H.-T. Shih, Malaise trap in wild rice field (9 females, TARI; 11 females, UCRC). Taipei City: 2.viii.1950, K. S. Lin, "sweeping on rice seed bed" (2 males, TARI); vi.1967, K. S. Lin (1 male, TARI); vii.1967, K. S. Lin (1 male, TARI); viii.1967, K. S. Lin (1 male, TARI); vii.1969, K. S. Lin (2 males, TARI); x.1972, K. S. Lin (1 male, TARI); 1.x.1974, K. S. Lin (1 male, TARI).

Extralimital material examined. France: Côte-d'Or, Esbarres, 4.ix.1961, J. Barbier (1 female, MNHN). Var, Toulon, 1.v.1948, J. Barbier (1 female, 1 male, MNHN). Japan, Honshu Island, Yamaguchi Prefecture, Yamaguchi, 22.vii.1969, K. S. Lin, in rice field (1 male,

TARI).

Hosts in Taiwan. *N. lugens* (Stål, 1854) (Delphacidae) and *N. cincticeps* (Uhler 1896) (Cicadellidae) (Lin 1974).

***Nepolynema grande* (Taguchi, 1971)**

N. grande (Taguchi): Triapitsyn, 2014a: 175 (Nantou Co.).

******Omyomymar breve* **Lin and Chiappini, 1996**

Material examined. Taiwan, Orchid Island (Lan Yü), 3–8.iii.1991, C. K. Starr, H. Y. Wang (1 female, CNC).

******Omyomymar* **?***longidigitum* **Lin and Chiappini, 1996**

Material examined. Taiwan, Taichung, Hsinkangshan (above Chengkung), 800 m, 17–22.iv.1998, A. Smetana, L. Robillard (1 female, CNC).

Comments. This female is very similar in most aspects to *O. longidigitum* Lin and Chiappini, 1996 from Fujian, China but has a relatively longer ovipositor. That, however, may be within an expected intraspecific variation because in many mymarids with very long ovipositors, their length can vary considerably.

******Omyomymar* **spp.**

Material examined. Taiwan: Nantou Co.: Meifeng, 16.xii–16.i.1991, C. S. Lin (1 female, CNC). Zhushan, Shan Lin Xi, 1,600 m, 16.v.1990, L. LeSage (1 male, CNC). Orchid Island (Lan Yü): 3–8.iii.1991, C. K. Starr, H. Y. Wang (1 male, CNC); 200 m, 5–9.vii.1991, C. K. Starr (3 females, 1 male, CNC). Pingtung Co., Kenting National Park, C. K. Starr, S. M. Wu: 200 m, 17–23.v.1991 (3 males, CNC); 210 m, 29.v.1991 (1 male, CNC).

Comments. These specimens, which were determined to genus by Dr. John T. Huber, belong to several species, some of them likely undescribed.

******Ooctonus kokozai* **Triapitsyn, sp. nov. (Figs. 94–103)**

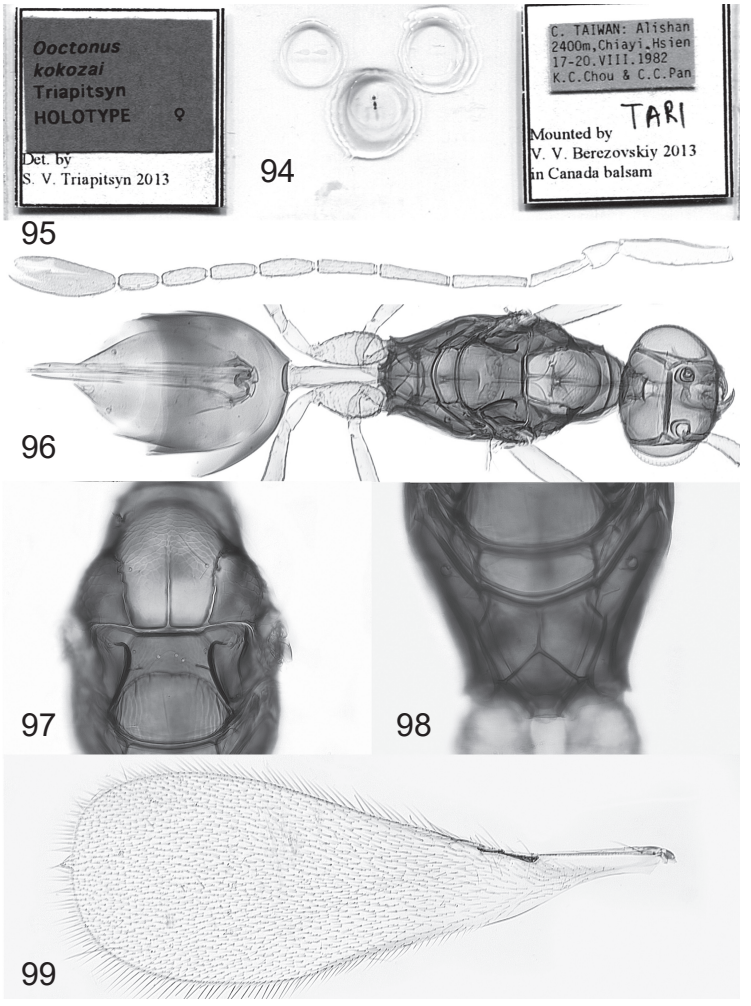
Type material. Holotype female (TARI) on slide (Fig. 94), labeled: 1. [orange] "C. TAIWAN: Alishan 2,400m, Chiayi Hsien 17–20.VIII.1982 K. C. Chou & C. C. Pan"; 2. "TARI Mounted by V. V. Berezovskiy 2013 in Canada balsam"; 3. [magenta] "*Ooctonus kokozai* Triapitsyn HOLOTYPE ♀"; 4. "Det. by S. V. Triapitsyn 2013." The holotype was remounted from a point; it is almost complete (missing one hind wing), dissected under 3 coverslips. Paratypes (all collected by sweeping and mounted on individual slides): Taiwan: Chiayi Co., Alishan: 2,450 m, 20–24.v.1956, K. S. Lin (1 male, TARI); 2,450 m (as "Mt. Ali"), 10–15.viii.1956, K. S. Lin (1 female, TARI); 2,450 m, 12–16.vi.1965, K. S. Lin (2 females, 1 male, TARI); 2,450 m, 16.vi.1965, K. S. Lin (9 females, 5 males, TARI; 1 female, 1 male, UCRC); 2,400 m, 5–9.viii.1981, L. Y. Chou, K. S. Lin (1 male, TARI).

Description. Female (holotype). Body (Fig. 96) mostly dark brown except mesoscutum apically and apical gastral terga brown, petiole light brown; scape and pedicel light brown, flagellum brown to dark brown; legs light brown except metafemur and metatibia brown.

Upper face with faint sculpture, lower face reticulate; vertex with faint cell-like sculpture.

Antenna (Fig. 95) long and slender, with radicle 0.28 times length of scape, remainder of scape 4.3 times as long as wide, a little wider medially than basally or apically, almost smooth; pedicel much shorter than F1; all funicular segments much longer than wide, among them F2 the longest and F8 the shortest; F1–F4 without mps, mps on F5 (2), F6 (1 on one antenna and 2 on the other), F7 (2), and F8 (2); clava 2.7 times as long as wide, a little shorter than scape (minus radicle), with 7 mps.

Mesosoma (Figs. 96–98) with pronutum lightly sculptured; midlobe of mesoscutum (Fig. 97) with a long median groove extending from its posterior margin to more than half length of mesoscutum; mesoscutum and anterior scutellum with conspicuous cell-like reticulate sculpture, frenum of scutellum with



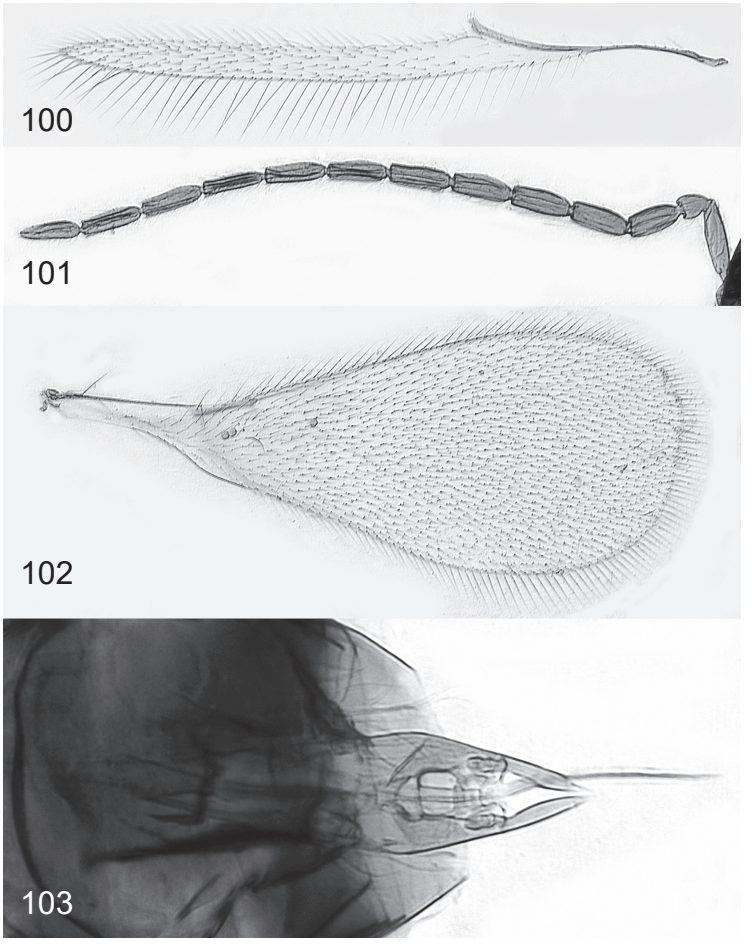
Figs. 94–99. *Ooctonus kokozai*, female (holotype): 94. Slide; 95. Antenna; 96. Body; 97. Mesoscutum and scutellum; 98. Dorsellum and propodeum; 99. Fore wing.

longitudinal cell-like sculpture on the sides and with faint, inconspicuous sculpture medially; metanotum smooth, with posterior margin slightly, broadly rounded; propodeum (Fig. 98) mostly smooth, with median (extending from basalmost point of the large pentagonal areole, formed by carinae at posterior margin of propodeum) carina short (much shorter than the areole) and almost extending to propodeal anterior margin; lateral carinae unifurcate, slightly diverging, almost extending to anterior margin of propodeum.

Fore wing (Fig. 99) 2.8 times as long as wide; disc with a slight brownish tinge throughout, densely setose (except bare behind base of submarginal vein), slightly truncate apically; longest marginal seta 0.2 times greatest width of wing. Hind wing (Fig. 100) 15.8 times as long as wide; disc with a slight brownish tinge and densely setose throughout (except for sparser setae and a small bare area just behind and beyond apex of venation); longest marginal seta 1.8 times greatest width of wing.

Pro- and meso-coxae smooth, metacoxa with light reticulate sculpture.

Petiole 4.1 times as long as wide, wider apically than basally, smooth, 1.2 times as



Figs. 100–103. *Ooctonus kokozai*: 100. Female hind wing (holotype); 101. Male antenna (paratype); 102. Male fore wing (paratype); 103. Male genitalia (paratype).

long as metacoxa. Gaster (Fig. 96) shorter than mesosoma; ovipositor rather long, occupying about 0.8 times length of gaster and notably exserted beyond apex of gaster (by 0.18 times total length of ovipositor), 0.95 times length of metatibia.

Measurements (mm) of the holotype. Body (of the slide-mounted specimen) 1.476; head 0.234; mesosoma 0.572; petiole 0.097; gaster 0.498; ovipositor 0.504. Antenna: scape (minus radicle) 0.181; pedicel 0.055; F1 0.094; F2 0.121; F3 0.115; F4 0.096; F5 0.088; F6 0.073; F7 0.073; F8 0.066; clava 0.17. Fore wing 1.587 : 0.56; longest marginal seta 0.111. Hind wing 1.187 : 0.075; longest marginal seta 0.136. Metatibia 0.529.

Variation (paratypes). Body length (slide-mounted specimens) 0.99–1.3 mm. Scape (minus radicle) 4.8–5.0 times as long as wide; F1 only slightly longer than pedicel in small specimens, F5 rarely with just 1 mps (in small specimens), F6 usually without mps or, rarely, with 1 mps (in large specimens); clava 3.7–3.8 times as long as wide. Fore wing 2.4–2.5 times as long as wide, longest marginal seta 0.16–0.24 times greatest width of wing; hind wing 14.5–15.5 times as long as wide, longest marginal seta 1.8–1.9 times greatest width of wing. Ovipositor exserted beyond apex of gaster by 0.12–0.17 times total length

of ovipositor, 0.83–0.93 times length of metatibia.

Male (paratypes). Body length (slide-mounted specimens) 0.93–1.32 mm. Similar to female except for the normal sexually dimorphic features such as antenna and genitalia (Fig. 103), and the following. Antenna (Fig. 101) with scape (including radicle) 3.6–4.0 times as long as wide, flagellum dark brown; fore wing (Fig. 102) 2.5–2.6 times as long as wide.

Diagnosis. *O. kokozai* (particularly its female antenna) is most similar to *Ooctonus lapen* Triapitsyn, 2010 from Nepal, which, however, has the mesoscutum almost completely smooth and a different arrangement of the propodeal carinae, but it does not even remotely fit in any of the other described Oriental species of *Ooctonus* reviewed by Triapitsyn (2010). An update to the key to the Palaearctic species of *Ooctonus* by Triapitsyn (2010) follows, to accommodate this new species, whose high altitude type locality is within the Palaearctic ecozone, and also *Ooctonus huberi* Bai, Jin and Li, 2015 from Heilongjiang, China (Bai *et al*. 2015).

Key to species of *Ooctonus* in the Palaearctic region (females)

1 Brachypterous: wings strongly abbreviated, fore wing not extending beyond apex of gaster ····· ·····*Ooctonus hemipterus* Haliday, 1833

– Macropterous: wings normal, fore wing extending beyond apex of gaster ····· 2

2(1) Entire head and mesosoma (including mesonotum and propodeum) with reticulate sculpture; fore wing rounded apically ····· *O. hemipterus* Haliday, 1833

– Head and mesosoma at most partially with reticulate or cell-like sculpture (metanotum and propodeum without); fore wing at least slightly truncate apically ····· 3

3(2) Mps present on both antennae only on F7 and F8 ····· 4

– Mps present on both antennae also on other funicular segments besides F7 and F8 ····· 5

4(3) Midlobe of mesoscutum with a median groove of variable length (from a very short one, just at posterior margin of mesoscutum, to a relatively long groove anteriorly narrowing and extending to about 0.5 times length of mesoscutum); frenum of scutellum with cell-like reticulate sculpture ····· ·····*Ooctonus saturn* Triapitsyn, 2010

– Midlobe of mesoscutum without median groove; frenum of scutellum mostly smooth except for a light sculpture at lateral borders and sometimes also at anterior margin ····· ·····*Ooctonus vulgatus* Haliday, 1833

5(3) Clava with 8 mps ····· 6

– Clava with 7 mps ····· 7

6(5) F3 with 1 mps at least on one of the antennae; ovipositor relatively longer (1.2–1.4 times length of metatibia), exserted beyond apex of gaster by 0.08–0.16 times total length of ovipositor ····· ·····*Ooctonus lokomotiv* Triapitsyn, 2010

– F3 without mps on both antennae; ovipositor relatively shorter (1.0–1.2 times length of metatibia), just barely exserted beyond apex of gaster (by less than 0.07 times total length of ovipositor) ····· ·····*Ooctonus insignis* Haliday, 1833

7(5) Midlobe of mesoscutum normally with a median groove of variable length [from a very short, narrow one, just at posterior margin of mesoscutum (rarely inconspicuous)], to a long groove anteriorly narrowing and extending almost up to 0.7 times length of mesoscutum) ·····8

– Midlobe of mesoscutum without median groove ····· 11

8(7) Propodeum with each of lateral carinae splitting anteriorly in two short, bifurcate (broadly Y-shaped) carinae and not extending to anterior margin of propodeum ···*Ooctonus orientalis* Doutt, 1961

– Propodeum with each of lateral carinae either entire, not splitting anteriorly or, if not straight, then not bifurcate, and

extending (or almost extending) to anterior margin of propodeum ·····9

9(8) F4 without mps ····· 10

– F4 with at least 1 mps (usually with 2 mps) ····· ·····*Ooctonus tretiakovi* Triapitsyn, 2010

10(9) F6 with 2 mps; propodeum with lateral carinae straight ····· ·····*Ooctonus spartak* Triapitsyn, 2010

– F6 usually without mps or, sometimes, with 1 mps (except rarely, in the very large holotype, with 2 mps on just one of the antennae); propodeum with lateral carinae unifurcate (angulate) anteriorly (Fig. 98) ····· ·····*O. kokozai* Triapitsyn, sp. nov.

11(7) Mps present on F5, F7 and F8 (F6 without mps) ····· ·····*Ooctonus notatus* Walker, 1846

– Mps normally present at least on F5–F8 (F6 with at least 1 mps, usually with 2, except very rarely F6 without mps in some *Ooctonus sublaevis* Foerster, 1847 [in that case propodeum with median (extending from basalmost point of usually small pentagonal areole, formed by carinae at posterior margin of propodeum, to anterior margin of propodeum) carina usually longer than (or sometimes subequal in length to) the areole, or often median carina incomplete, not extending to anterior margin of propodeum, or almost absent]) ····· 12

12(11) F4 with 2 mps ·····13

– F4 normally without mps or, if very rarely F4 with 1 mps (in some *O. sublaevis*), then propodeum with median carina usually longer than (or sometimes subequal in length to) the areole, or often median carina incomplete, not extending to anterior margin of propodeum, or almost absent ····· 14

13 (12) Propodeum with median areole separated from dorsellum by a median carina; gaster light brown, contrastingly lighter than mesosoma; ovipositor relatively longer, at least 1.1 times as long as metatibia ····· ·····*Ooctonus novickyi* Soyka, 1950

– Propodeum with median areole abutting dorsellum (median carina absent); gaster brown, not contrastingly lighter than mesosoma; ovipositor relatively shorter, at most 0.9 times as long as metatibia ····· ·····*O. huberi* Bai, Jin and Li, 2015

14(12) Propodeum with median carina usually longer than (or sometimes subequal in length to) the areole, or often median carina incomplete, not extending to anterior margin of propodeum, or almost absent ····· *O. sublaevis* Foerster, 1847

– Propodeum with large pentagonal areole (formed by carinae at posterior margin of propodeum) extending to or almost to anterior margin of propodeum, thus median carina practically absent (or very short) ····· ·····*Ooctonus us* Triapitsyn, 2010

Etymology. The new species is named in honor of my friend and fellow entomologist Dr. Vladimir Anatol'evich Kokoza (Department of Entomology, University of California, Riverside, USA), a well-known specialist in transgenic mosquitoes.

Hosts. Unknown.

***Ooctonus notatus* Walker, 1846**

Material examined. Taiwan, Pihu (1 km E of Taipei on highway to Zlan), 10.ii.1972, T. Z. Maa (1 female, TARI).

***Ooctonus ?us* Triapitsyn, 2010**

Material examined. Taiwan, Wulai (20 km S of Taipei City), 20.iii.1963, K. S. Lin (1 female, TARI).

***Palaeoneura ?hishimoni* (Taguchi, 1975)**

Material examined. Taiwan, Tsaoshan (20 km N of Taipei City), 19.v.1963, K. S. Lin (1 female, TARI).

***Palaeoneura tayalum* (Taguchi, 1975)**

Chaetomymar tayalum Taguchi 1975: 113–114 (Fenchihu, Chiayi Co.; holotype female lost from EUMJ).

P. tayalum (Taguchi): Triapitsyn and Aquino, 2010: 76.

Comments. Unfortunately, a good match to *P. tayalum* is lacking among several unidentified specimens of *Palaeoneura* from Taiwan in TARI, all poorly mounted on slides, so no neotype could be designated here for this taxon.

***Palaeoneura* spp.**

Material examined. Taiwan: Changhua Co.: Changhua City, x.1967, K. S. Lin (1 female, TARI). Xihu, x.1967, K. S. Lin (1 female, TARI). Yuanlin City, 2.ix.1967, K. S. Lin (1 male, TARI). Chiayi Co., Alishan, 2,450 m, 12–16.vi.1965, K. S. Lin (4 females, 2 males, TARI). Kaohsiung, Kuanshan Trail at Kuanshanchi River, 2,400 m, 20–23.vii.1993, A. Smetana (1 female, CNC). Pingtung Co., Kenting National Park, Hengchun, Kueitzuchiao (as "Kuraru, Heng Chung"), 22–29.v.1965, K. S. Lin (2 females, TARI). Taipei City: 1–12. vii.1963, K. S. Lin (1 female, TARI); 15–30. ix.1963, K. S. Lin (1 female, TARI); 21–31. v.1964, K. S. Lin (1 female, TARI); x.1972, K. S. Lin (1 female, TARI).

Comments. Among these, I was able to recognize several morphospecies belonging to the group of species which corresponds to the former genus *Chaetomymar* Ogloblin, 1946, as defined by Triapitsyn & Berezovskiy (2007, p. 42). At least three of those are undoubtedly new species; one of them (females from Kenting National Park and Taipei City) is characterized by a very long, strongly exserted ovipositor. Another undescribed species from the third species group of *Palaeoneura*, as defined by Triapitsyn and Berezovskiy (2007, p. 42), is from Alishan.

****Platystethynium glabrum* Jin and Li, 2016** (Fig. 104)

Material examined. Taiwan, Pingtung Co., Kenting National Park, 210–230 m, 5.v.1991, C. K. Starr, S. M. Wu, pan trap in secondary forest (1 female, CNC).

Comments. This specimen (Fig. 104), which was determined to genus by Dr. John T. Huber, fits well the original description of *P. glabrum*, described based on a single specimen (the holotype female) from Yunnan, China (Jin & Li 2016) without examination of the type series of the type species of the genus *Platystethynium* Ogloblin, *P. onomarchicidum* Ogloblin, 1946 from Java Island, Indonesia (Ogloblin 1946). Thus, the diagnosis in the original description of *P. glabrum* contains several incorrect statements about its differences from *P. onomarchicidum*, particularly about pelocity of the eyes (identically absent in both species), proportions of the antennal segments (about the same or within an expected intraspecific variation), and relative length of the propodeum (about the same). The only potentially significant difference between these two nominal taxa is the relative length of the ovipositor, which is about 1.8 times length of metatibia in *P. glabrum* but about 3.0 times in *P. onomarchicidum*. Otherwise, they are very similar in all other morphological features including the shape and proportions of the fore wing (about 9.6 times as long as wide in the holotype of *P. glabrum* and about 10.0 times in *P. onomarchicidum*). Without having at hand a good number of freshly collected specimens and the supporting molecular data, it is difficult to figure out whether these differences in the relative ovipositor length are due to intraspecific (that would probably be a more likely scenario) versus interspecific variation. I have examined 3 dry-mounted non-type females of *P. onomarchicidum* that have the same data as the female holotype and 32 female paratypes of this species (mounted on 2 slides). These non-type specimens, which are identically labeled: 1. "INDONESIA, Java Buitensorg, V-1939 C. Franssen"; 2. "ex. *Onomarchus uninotatus* (Audinet-Serv.)," had been borrowed from the National Museum of Natural History, Washington, District of Colum-

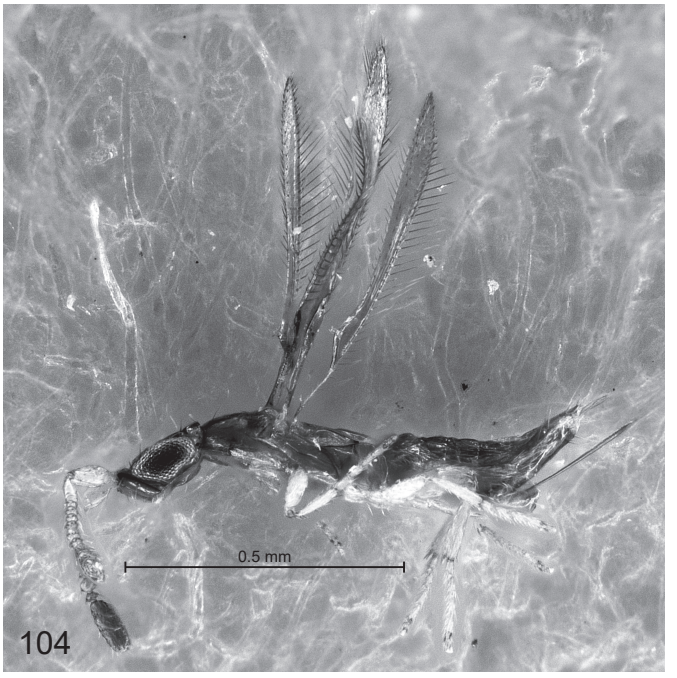


Fig. 104. *Platystethynium glabrum*, female (Kenting National Park, Pingtung Co., Taiwan): habitus in lateral view.

bia, USA (USNM), and one of them was then slide-mounted in Canada balsam at UCRC. The type locality of this species is Bogor (West Java Province, Java Island). Illustrated here, to facilitate its recognition, are an antenna (Fig. 105), body (Fig. 106), fore (Fig. 107) and hind (Fig. 108) wings of the slide-mounted female of *P. onomarchicidum*. Also examined was a specimen of *Platystethynium* sp. which in most regards fits *P. glabrum* but has a relatively broader fore wing (about 8.1 times as long as wide), and whose ovipositor is 2.3 times as long as metatibia: Thailand, Chiang Mai, Toong Tha Tam, Amphur Mae Wang, 1–10. x.1997, S. Sonthichai (1 female, UCRC).

***Polynema* (*Doriclytus*) sp.**

Material examined. Taiwan, Chiayi Co., Alishan, 2,450 m, 16.vi.1965, K. S. Lin (1 female, TARI).

***Polynema* (*Dorypolynema*) *mendeli* Girault, 1913**

Material examined. Taiwan: Chiayi Co., Chiayi, 26.ix.1957, K. S. Lin (2 females, 1 male, TARI). Taipei City, 6.viii.1960, K. S. Lin, "sweeping on rice seed bed" (1 female, TARI). Tsaoshan (20 km N of Taipei City), 14.viii.1958, K. S. Lin (1 female, TARI).

***Polynema* (*Dorypolynema*) sp.**

Material examined. Taiwan, Taipei City, 1–15.x.1963, K. S. Lin (1 female, TARI).

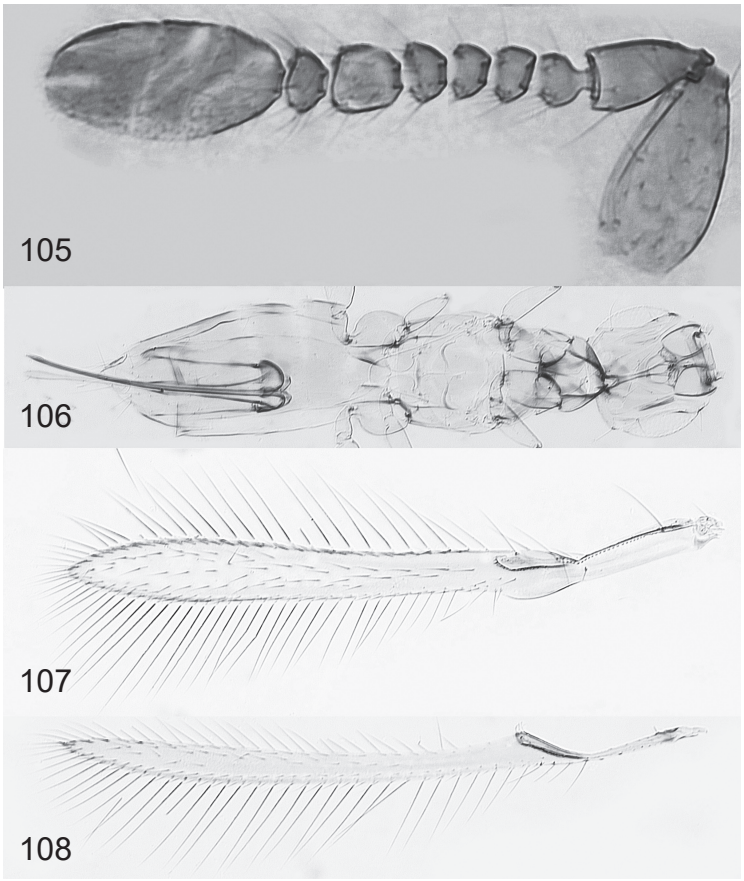
Comments. This specimen undoubtedly represents a new, undescribed species which is larger and darker than *P.* (*Dorypolynema*) *mendeli*, and also has a much wider fore wing.

***Polynema* (*Polynema*) sp(p).**

Material examined. Taiwan, Chiayi Co., Alishan, 2,450 m: 20–24.v.1956, K. S. Lin (1 female, TARI); 12–16.vi.1965, K. S. Lin (52 females, 11 males, TARI).

***Stephanocampta* sp.**

Material examined. Taiwan, Nantou Co., E of Shankan, 2,000–2,200 m, 28.v.1990, J. M. Heraty (1 female, CNC, determined by J. T.



Figs. 105–108. *Platystethynium onomarchicidum*, female (Bogor, West Java, Java Island, Indonesia): 105. Antenna; 106. Body; 107. Fore wing; 108. Hind wing.

Huber).

Comments. This interesting specimen represents an undescribed species, in which F2 of the female antenna is about as long as F3.

***Stephanodes reduvioli* (Perkins, 1905)**

Stephanodes orientalis Taguchi, 1978: 75 (Taipei).

Material examined. Taiwan: Chiayi Co., Alishan, 2,450 m, 16.vi.1965, K. S. Lin (1 female, TARI). Pingtung Co., Pingtung, 10.iii.1970, K. S. Lin, in rice field (1 female, TARI). Taichung, Taichung District Agricultural Improvement Station, 16.vii.1976, K. S. Lin, in rice field (2 females, TARI). Taipei: 1.x.1974, K. S. Lin (1 female, TARI); 8.x.1974, K. S. Lin (1 male, TARI).

Extralimital material examined. Japan, Honshu Island, Yamaguchi Prefecture, Yamaguchi, 22.vii.1969, K. S. Lin, sweeping in rice field (2 females, TARI).

****Stethynium* sp.**

Material examined. Taiwan: Pingtung Co., Kenting National Park: 210–230 m, 5.v.1991, C. K. Starr, S. M. Wu (1 female, CNC); 200 m, 17–23.v.1991, C. K. Starr, S. M. Wu (2 females, CNC). Taipei City, City Park, 1–19. xii.1990, J. T. Chao (1 male, CNC).

Comments. These specimens, determined to genus by Dr. John T. Huber, may belong to *Stethynium triclavatum* Enock, 1909 but I am reluctant to make a positive identification because taxonomy of non-Holarctic species of

the genus *Stethynium* Enock, 1909 is currently in disarray.

***Zeyanus kweishuilini* Triapitsyn, 2016**

Z. kweishuilini Triapitsyn in Triapitsyn *et al*. 2016: http://dx.doi.org/10.1080/00305316.2016.1263246, published online 9.xii.2016 (Kenting National Park, Pingtung Co.); Triapitsyn *et al*., 2017: 147 (illustrations), 149–154, 158 (key) (printed version).

***Zeyanus shihi* Triapitsyn, 2016**

Z. shihi Triapitsyn in Triapitsyn *et al*. 2016: http://dx.doi.org/10.1080/00305316.2016.1263246, published online 9.xii.2016 (Kenting National Park, Pingtung Co.); Triapitsyn *et al*., 2017: 148 (illustrations), 154–155, 158 (key) (printed version).

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台灣纓小蜂科 (膜翅目：小蜂總科) 名錄記述暨五新種描述

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摘要

Triapitsyn, S. V. 2018. 台灣纓小蜂科 (膜翅目：小蜂總科) 名錄記述暨五新種描述。台灣農業研究 67(2):113–165。

本文有關台灣產膜翅目纓小蜂科名錄，包括每物種的分布與寄主訊息，總計 28 屬 60 種，其中 13 屬 33 種為新紀錄，以及 *Acmopolynema berezovskiyi* sp. n., *Anagroidea montana* sp. n., *Camptoptera jthuberi* sp. n., *Mymar alishan* sp. n. 與 *Ooctonus kokozai* sp. n. 等 5 個新種。本文也將 *Eubroncus* Yoshimoto, Kozlov and Trjapitzin, 1972 之模式種—*Eubroncus orientalis* Yoshimoto, Kozlov and Trjapitzin, 1972，進行雄成蟲重新描述，並以採自印尼蘇拉威西島的一件雌成蟲標本，進行首次描述。隨文檢附 *Eubroncus* 屬的物種檢索表，其中 *Eubroncus hani* Jin and Li, 2014 為 *Eubroncus indicus* Hayat and Khan, 2009 的新異名，該物種係以採自尼泊爾的雄成蟲標本為描述依據；本文另就 *Cosmocomoidea tenuis* Xu, Lin and Hu, 2016 與 *Eubroncus tibetanus* Jin and Li, 2014，分別檢查來自台灣與日本的雄成蟲標本，進行描述。纓小蜂科為卵寄生蜂類，其某些成員為半翅目稻蝨科與葉蟬科等農業害蟲的重要天敵，在台灣之往昔記錄中對此等蟲種已有嚴謹之分析。

關鍵詞：纓小蜂科、名錄、新種、台灣、卵寄生蜂。

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